685

TC-209SD

REVISED

AEP Model
UK Model

STEREO CASSETTE-CORDER

SPECIFICATIONS

Power requirements: AC 110, 127, 220, 240 V, 50 Hz
Power consumption: 38 W
Tape speed: 4.8 cm/s (1 7/8 ips)
Fast forward and rewind time: Approx. 70 seconds (by C-60)
Track system: 4-track 2-channel stereo
Record bias frequency: 105 kHz
Signal-to-Noise ratio: DOLBY NR* OFF
With Ferri-Chrome Cassette
61 dB at peak level (NAB)
53 dB (DIN)
With chromium dioxide cassette
57 dB at peak level (NAB)
48 dB (DIN)
With regular cassette
55 dB at peak level (NAB)
46 dB (DIN)
DOLBY NR* ON
Improved 5 dB at 1 kHz, 10 dB above 5 kHz
Total harmonic distorsion: 1.7 %
Frequency response: DOLBY NR* OFF
With Ferri-Chrome Cassette and chromium dioxide cassette
20–18,000 Hz (NAB)
30–15,000 Hz ±3 dB (NAB)
30–16,000 Hz (DIN)
With regular cassette
20–15,000 Hz (NAB)
30–13,000 Hz (DIN)

* The word Dolby is a trademark of Dolby Laboratories, Inc.

Wow and flutter: 0.07 % WRMS (NAB)
±0.18 % (DIN)
Inputs: MIC (phone jack) 2
sensitivity: -72 dB (0.2 mV)
for low-impedance microphone
LINE IN
phono jack 2
stereo binaural jack 1
sensitivity: -22 dB (60 mV)
input impedance: 100 kΩ
Outputs: LINE OUT (phono jack) 2
output level: 0 dB (0.775 V)
at load impedance 100 kΩ
LINE OUT level control at "10"
load impedance: more than 10 kΩ
HEADPHONES 1
load impedance: 8 Ω
Record/playback jack: Input impedance less than 10 kΩ
Output impedance less than 10 kΩ
Record/playback head: PF145-3602
Erase head: EF135-36
Motor: HC-526L
Semiconductors: 2 ICs, 2 FETs, 48 transistors, 42 diodes, 1 LED
Dimensions: Approx. 430 (w) x 170 (h) x 320 (d) mm
17(w) x 6 3/4 (h) x 12 5/8 (d) inches
Including projecting parts and controls
Weight: Approx. 12 kg, 26 lb 8 oz

SONY®

SERVICE MANUAL

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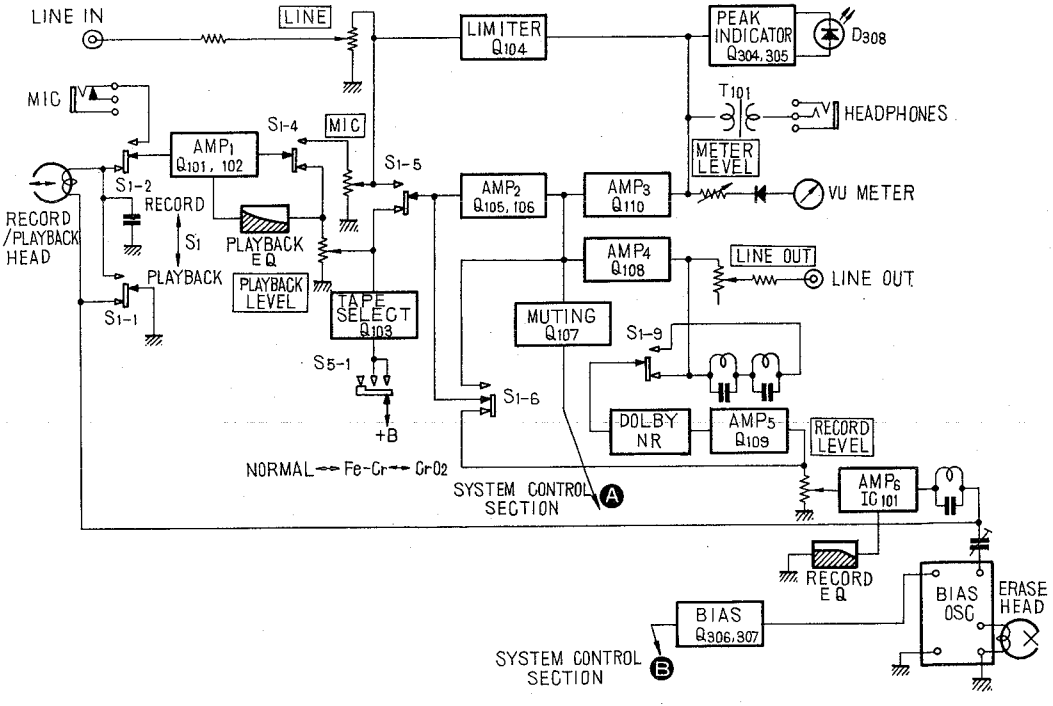
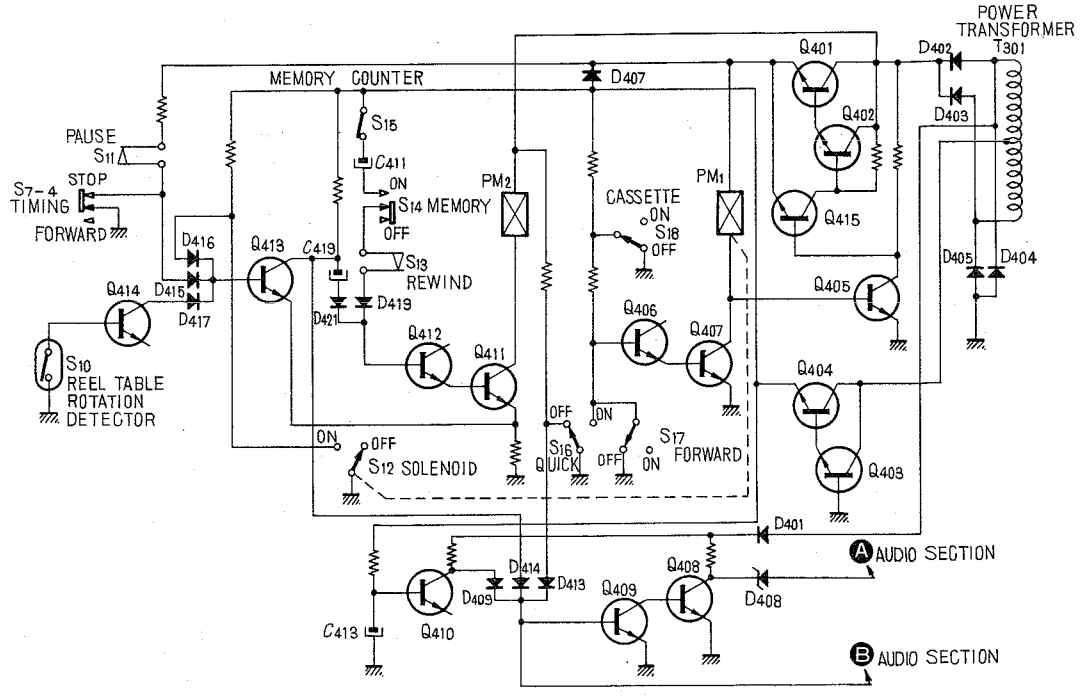
SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM





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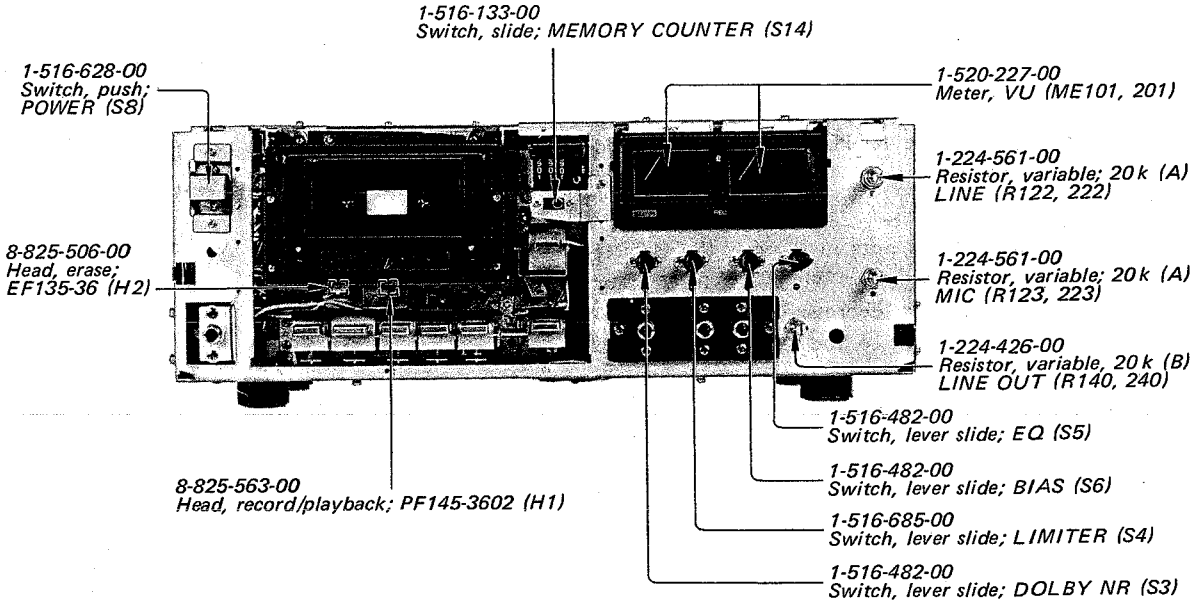
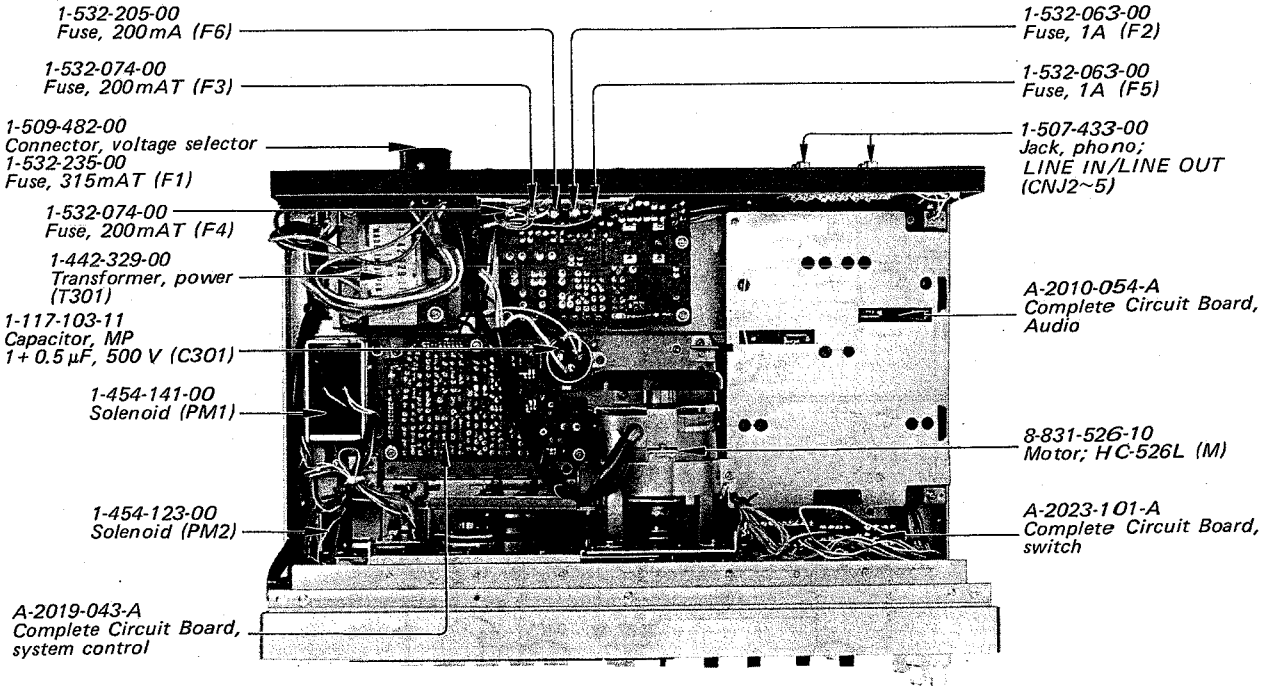
1-2. INTERNAL VIEW (1)



1-3. INTERNAL VIEW (2)



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1-4. CIRCUIT DESCRIPTION

1. Muting Function at Power ON
(Routes ① , ② and ③):

Q410 and Q408 are in off state and Q409 is in ON state until C413 connected to the base of Q410 charges up. The muting voltage is applied to the muting circuit through D408.

2. From Stop Mode to Playback, Fast Forward or Rewind Mode
(Routes ④ and ⑤):

If a tape cassette puts in the set, the cassette switch S18 turns ON. When the forward or rewind button is depressed, the quick and forward switches (S16 and S17) turn ON (S16 turns OFF immediately) and Q406 and Q407 turn ON. Accordingly, the function solenoid PM1 turns ON.

Routes ⑧ , ⑨ , ⑩ and ⑲ :

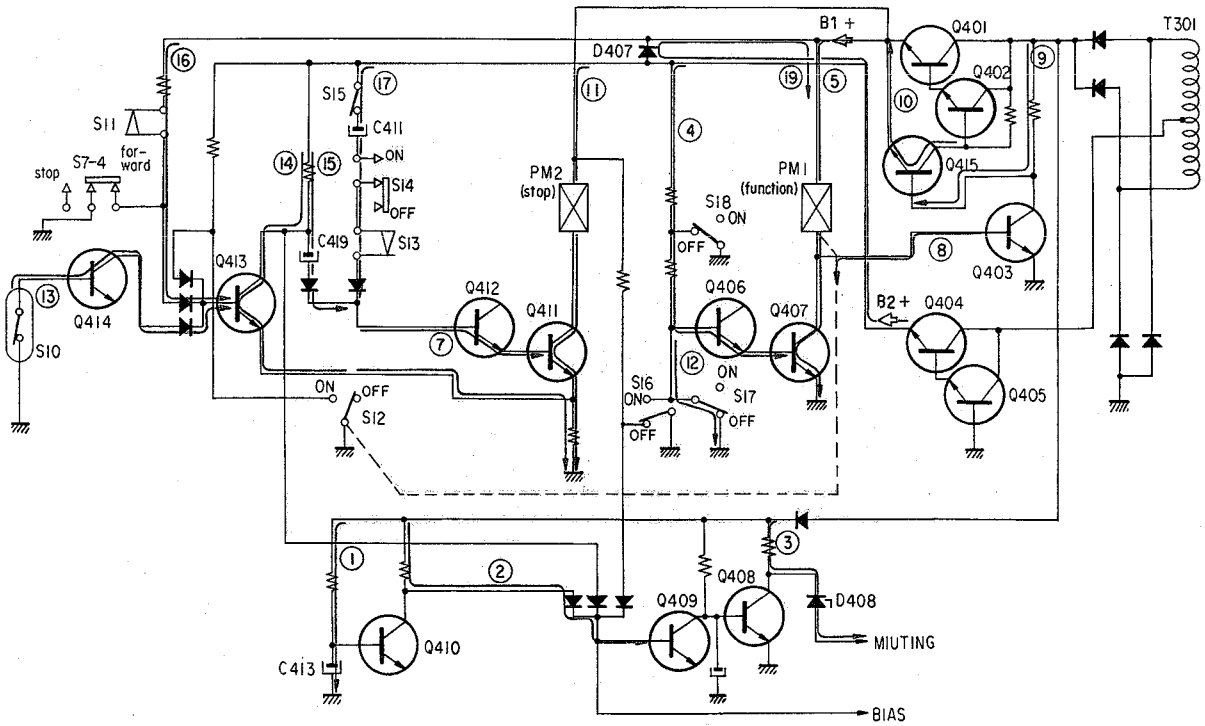
When Q406 and Q407 turned ON, the base potential of Q403 becomes zero and Q403 turns OFF. Thus Q415 turns ON and the emitter of Q401 and the base of Q402 are in the short-circuit condition. Namely, Q402 turns OFF and Q401 becomes open. In this condition, B1 + voltage disappears. However, the function solenoid PM1 keeps the ON condition by taking B2 + voltage through D407.

3. From PAUSE Mode to Playback, Fast Forward of Rewind Mode
(Routes ⑥ , ⑦ , ⑪ and ⑫):

The forward switch S17 turns ON. When the forward, rewind or fast forward button is depressed, the quick switch S16 and forward switch S17 are momentarily turns ON. The function solenoid PM1 turns OFF once and then turns ON. In this condition, the plunger switch S12 turns ON.

4. Auto Shut-off
(Routes ⑬ , ⑭ , ⑮ , ⑦ and ⑪):

The automatic shut-off function utilizes a rotating magnet ring, reed switch, d-c amplifier and a solenoid.
In playback, fast forward or rewind mode, a-c voltage is generated by the magnet ring and reed switch S10. This a-c voltage is amplified by Q414 and rectified by a diode. Due to this d-c voltage, Q413 turns ON; Q412, Q411 and the stop solenoid PM2 turn OFF. When the a-c voltage does not generate at the magnet ring and reed switch combination, Q413 turns OFF, Q412 and Q411 turn ON. Accordingly the stop solenoid PM2 also turns ON and shuts the mechanism OFF.



S7: TIMING
S10: REED
S11: PAUSE
S12: SOLENOID
S13: REWIND
S14: MEMORY
S15: MEMORY COUNTER
S16: QUICK
S17: FORWARD
S18: CASSETTE

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5. Playback and PAUSE Modes
(Routes ⑯ and ⑭):

In these modes, the pause switch S11 turns ON or the timing switch S7-4 turns to forward position. In this condition, Q413 turns always ON and Q412 and Q411 turn OFF. When the magnet ring stops rotating, the stop solenoid is in OFF condition and thus the shut-off mechanism does not operate.

6. Rewind Mode and MEMORY COUNTER
(Routes ⑰ , ⑦ and ⑪):

When COUNTER MEMORY switch S14 is turned to ON position in the rewind mode (rewind switch S13 turns ON), the counter switch S15 (built in the tape counter) turns ON at the count of 999. In this condition C411 charges up and Q412 and Q411 turn ON. Thus the stop solenoid PM2 turns ON and the shut-off mechanism operates.

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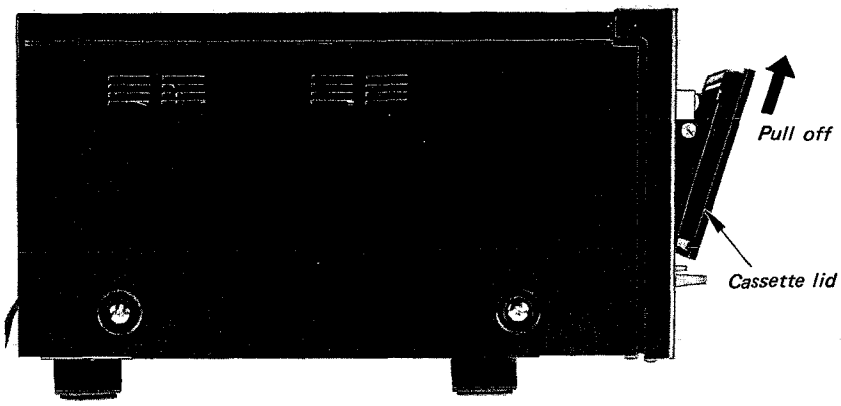
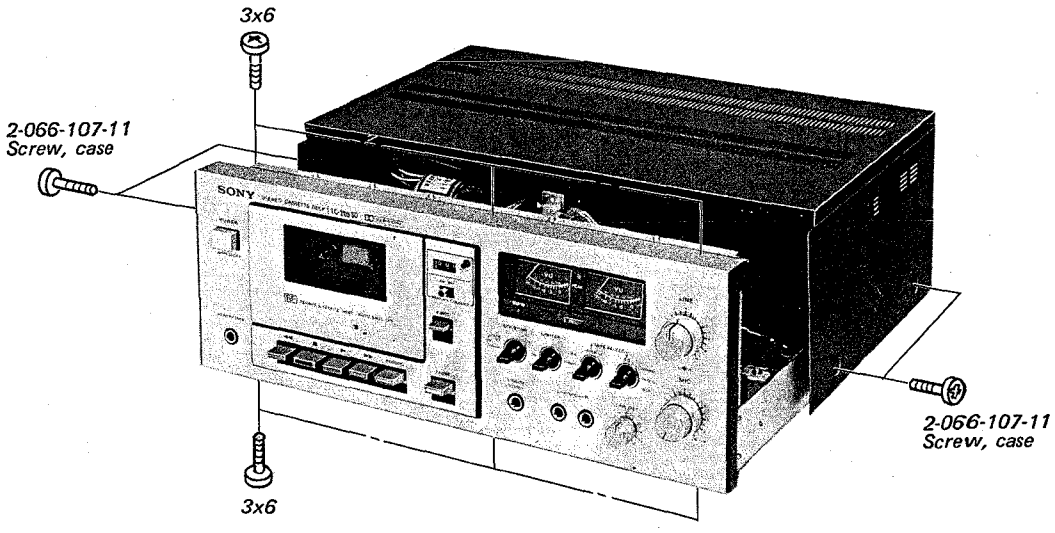
SECTION 2
DISASSEMBLY

2-1. CASSETTE LID REMOVAL



2-2. FRONT PANEL REMOVAL



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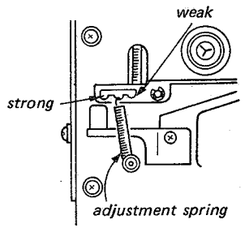
SECTION 3
ADJUSTMENTS

3-1. MECHANICAL ADJUSTMENTS

Forward Back Tension Torque Adjustment

– Playback Mode –

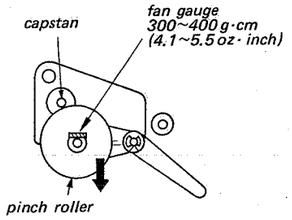
Adjust by changing spring hook position to obtain the torque of 2～4 g·cm (0.03～0.05 oz·inch).



Pinch Roller Pressure Measurement

– Playback Mode –

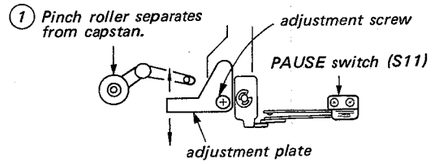
Note: Separate the pinch roller away from the capstan. Slowly return the pinch roller and measure the pressure just when the pinch roller contacts the capstan.

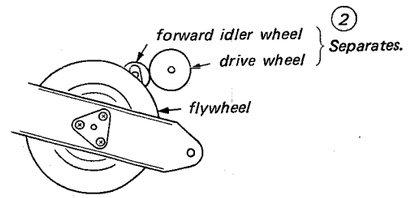


PAUSE Switch (S11) Timing Adjustment

– PAUSE Mode –

Loosen the adjustment screw and adjust the position of the adjustment plate so that step (1) and (2) occure in this order or at the same time.

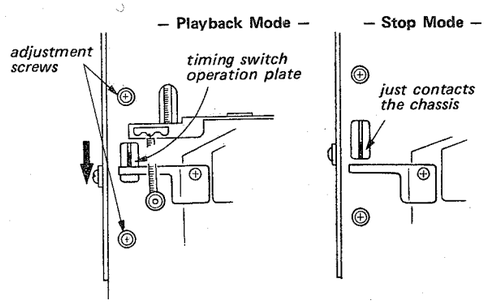


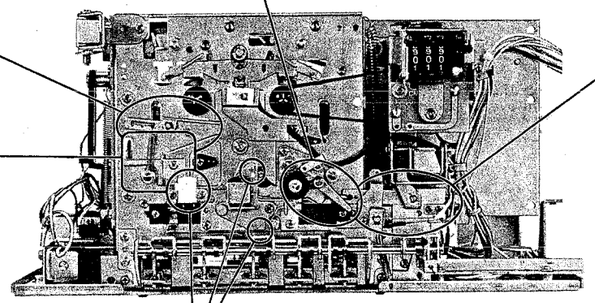


Timing Switch (S7) Position Adjustment

– Playback and Stop Modes –

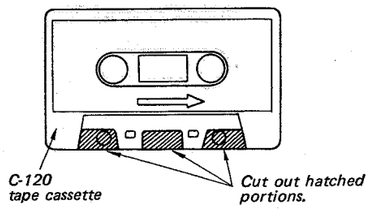
In playback mode, loosen the adjustment screws and fully push the timing switch operation plate in the arrowed direction. Tighten the screws and confirm that the timing switch operation plate places as illustrated while operating the set in playback and stop modes alternately.



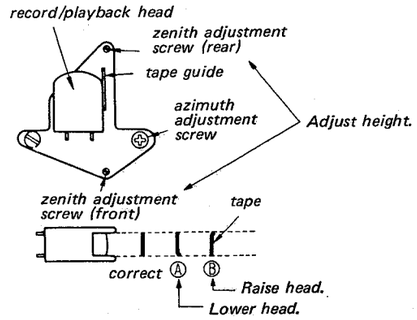


Head Height Adjustment

1. Make an adjustment cassette as shown below.



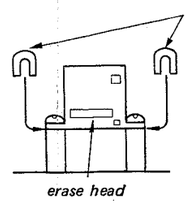
2. Adjust the zenith adjustment screws to eliminate any tape curls at the tape guide of the record/playback head while slowly depressing the forward button.
   After this adjustment, perform the record/playback head adjustment.



3. If any tape curl exist at the erase head, eliminate the curl by adjusting the height of the erase head using adjustment washer (shim) with the adjustment tape cassette loaded.

Adjusting washer (shim):

Part No.	
3-513-237-01	t = 0.1 mm
3-513-237-11	t = 0.2 mm



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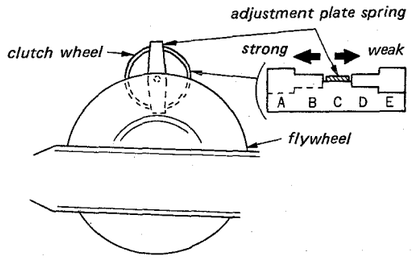
Forward Torque Adjustment

– Playback Mode –

Adjust torque by changing the position of the plate spring on the clutch wheel.

Forward torque: 40~60 g.cm (0.55~0.83 oz.inch)

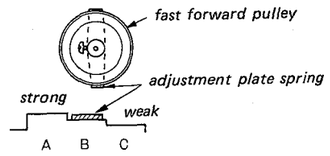


Fast Forward Torque and Rewind Torque Adjustments

– Fast Forward or Rewind Modes –

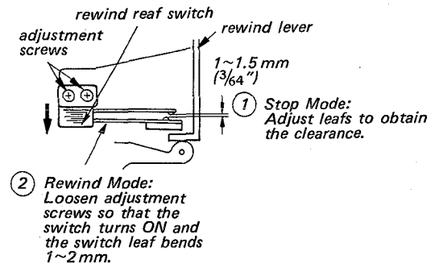
Adjust torque by changing the position of plate spring to obtain the specified torque.

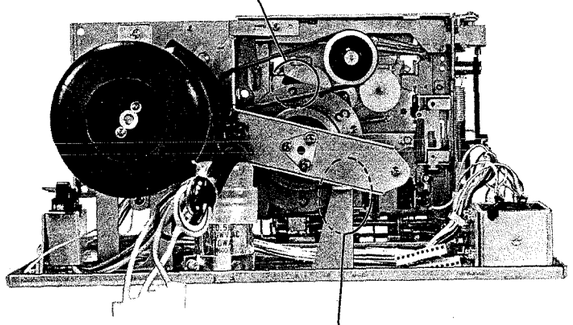
Fast forward and rewind torque: 80~120 g.cm (1.1~1.6 oz.inch)



Rewind Leaf Switch (S13) Position Adjustment

– Rewind and Stop Modes –

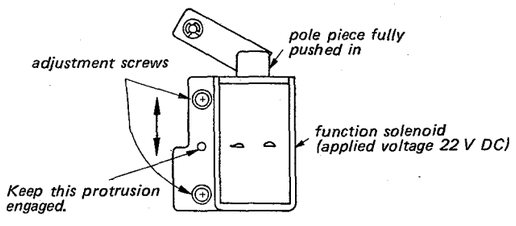

rewind reaf switch
adjustment screws
rewind lever
1~1.5 mm (3/64")
1 Stop Mode: Adjust leafs to obtain the clearance.
2 Rewind Mode: Loosen adjustment screws so that the switch turns ON and the switch leaf bends 1~2 mm.

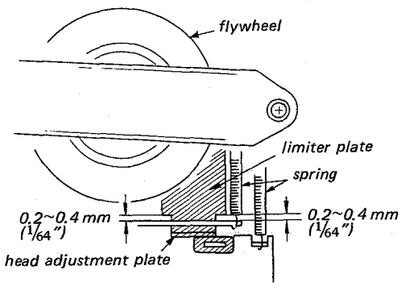


Forward Limiter Adjustment

– Stop and Playback Modes –

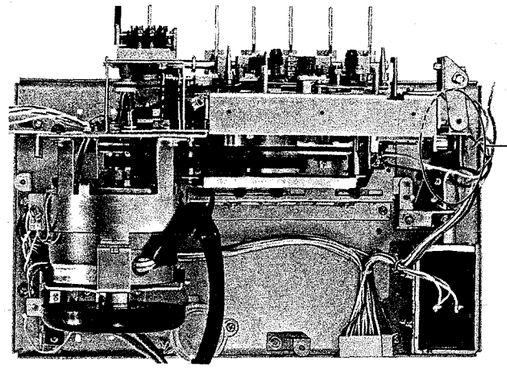
In stop mode, loosen adjustment screws and adjust the position of the function solenoid to obtain the specified clearance between the limiter plate and head adjustment plate.





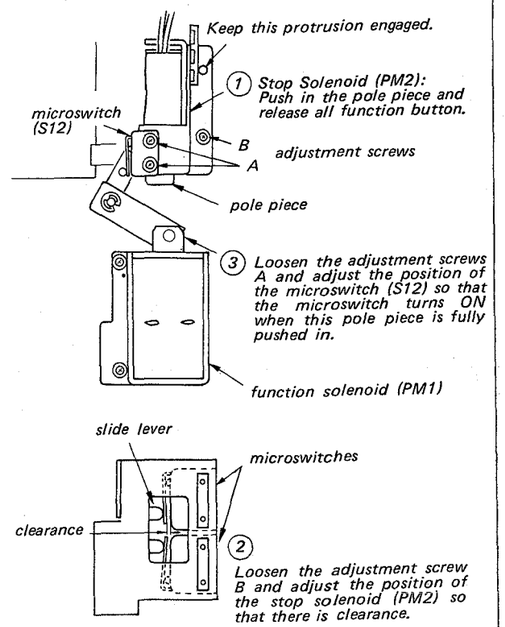
After adjustment, confirm the clearance by changing modes playback and stop alternately.

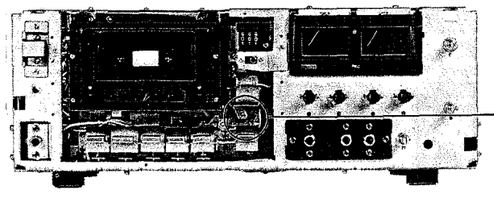
After adjustment, secure the adjustment screws.



Stop Solenoid (PM2) Position Adjustment

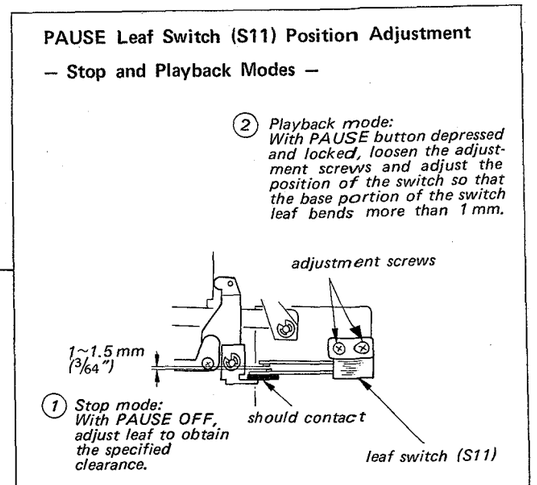
– Playback Mode –


Keep this protrusion engaged.
1 Stop Solenoid (PM2): Push in the pole piece and release all function button.
microswitch (S12)
B
A
adjustment screws
pole piece
3 Loosen the adjustment screws A and adjust the position of the microswitch (S12) so that the microswitch turns ON when this pole piece is fully pushed in.
function solenoid (PM1)
slide lever
microswitches
clearance
2 Loosen the adjustment screw B and adjust the position of the stop solenoid (PM2) so that there is clearance.



PAUSE Leaf Switch (S11) Position Adjustment

– Stop and Playback Modes –


2 Playback mode: With PAUSE button depressed and locked, loosen the adjustment screws and adjust the position of the switch so that the base portion of the switch leaf bends more than 1 mm.
adjustment screws
1~1.5 mm (3/64")
1 Stop mode: With PAUSE OFF, adjust leaf to obtain the specified clearance.
should contact
leaf switch (S11)

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3-2. ELECTRICAL ADJUSTMENTS AND MEASUREMENTS

PRECAUTION

1. Clean the following parts with an alcohol moistened swab:
   * record/playback head
   * erase head
   * capstan
   * pinch roller
   * rubber belts
   * idlers
2. Demagnetize record/playback head with a head demagnetizer.
3. Do not use magnetized screwdriver for adjustments.
4. After the adjustments, apply a small amount of a locking compound to the parts adjusted.
5. The adjustments should be performed in the order arranged in this service manual.
6. The adjustments and the measurements should be performed for both L-CH and R-CH with rated power supply voltage unless otherwise specified.
7. The record and playback level adjustments should be carefully performed.
8. Tapes required:
   1) blank tapes (completely erased with bulk eraser)
      SONY CS-10 (HF)
      CS-20 (CrO_2) with two extra holes
      CS-30 (Fe-Cr)
   2) test tapes
      SONY P-4-A81 (6.3 kHz, -10 dB)
      P-4-L81 (333 Hz, 0 dB)
      WS-48 (3 kHz, 0 dB)
9. The switches and the controls should be set as follows unless otherwise specified.
   DOLBY NR switch: OFF
   LIMITER switch: OFF
   LINE control: MIN
   MIC control: MIN
   TAPE SELECT EQ switch: NORMAL
   TAPE SELECT BIAS switch: NORMAL
10. Standard record:
    Supply the specified input signal level to the input jack and set the MIC or LINE control to obtain the specified output signal level. Set the LINE control to MIN when MIC input is used or set MIC control to MIN when LINE IN is used.

Normal Input Level

	MIC	LINE IN
source impedance	300 Ω	10 kΩ
input level	-60 dB (0.77 mV)	-10 dB (0.25 V)

Normal Output Level

	LINE OUT	HEADPHONE
load impedance	100 kΩ	8 Ω
output level	0 dB (0.775 V)	-28 dB (31 mV)

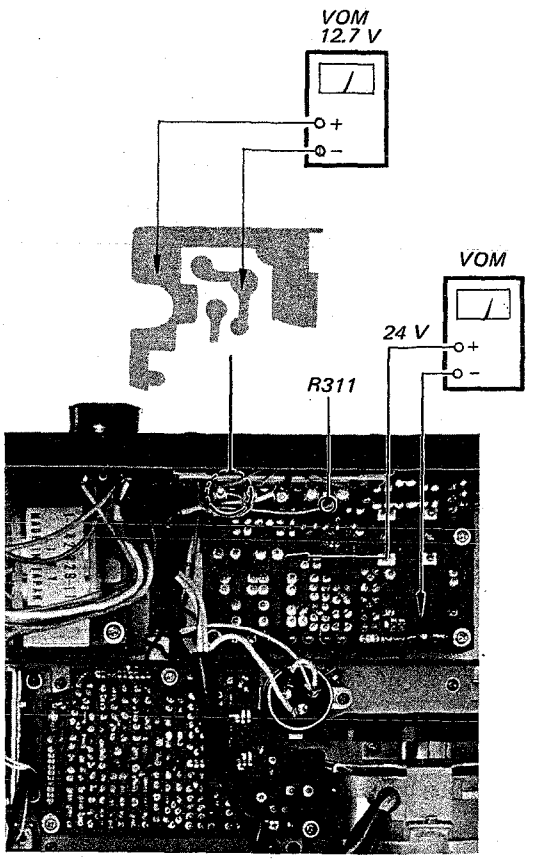
1. B+ Voltage Adjustment

Procedure:

POWER switch: ON

1. Adjust R311 to obtain 24 V VOM reading.
2. Check for -12.7 V (-13.5 ~ -11.5 V).

Adjustment Location:



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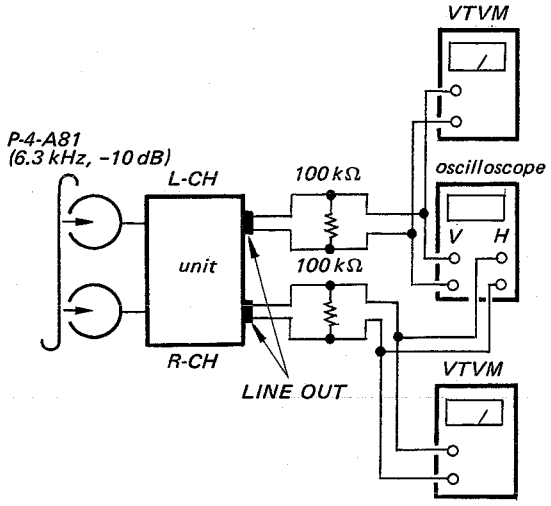
2. Record/Playback Head Azimuth Adjustment

Procedure:

1. Mode: Playback

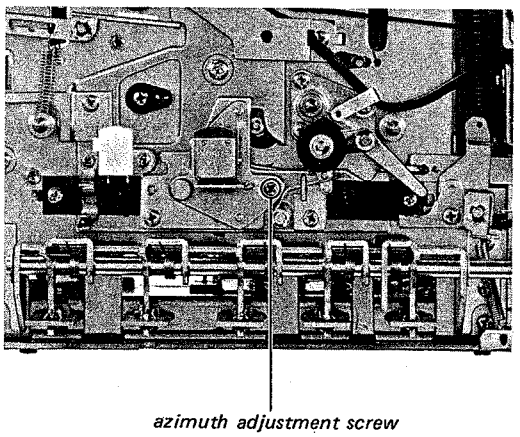


2.

Adjust	Oscilloscope patterns
azimuth adjustment screw to obtain the in-phase pattern around the highest VTVM readings.	[Allowance] In-phase ~ 90° out-of phase (L) (R) (L) (R) Level drop should be within 0.5 dB.

3. Assure that LINE OUT level difference does not change when the mode is changed from playback to stop several times.
4. After adjustment, apply locking compound to the screw.

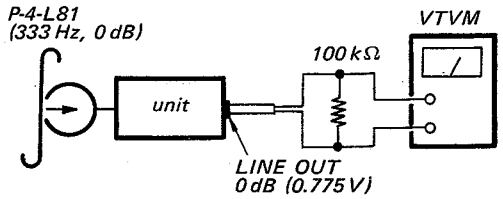
Adjustment Location:



3. Playback Level Adjustment

Procedure:

1. Mode: Playback



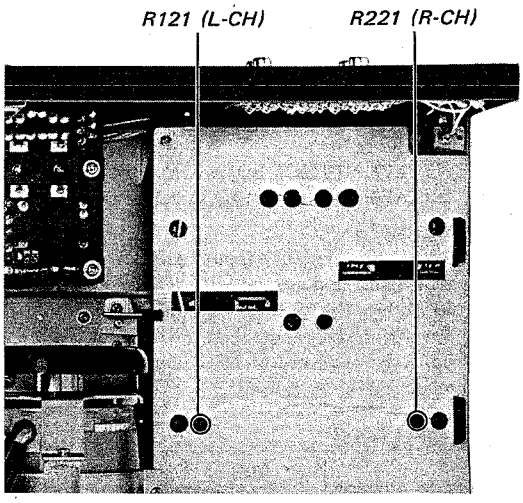
Adjust R121 (L-CH) and R221 (R-CH) to obtain 0 dB (0.775 V) VTVM reading.

2. Assure that the LINE OUT level does not change when the mode is changed from playback to stop several times.

Specification:

LINE OUT level:	0 dB ± 0.5 dB (0.73~0.81 V)
Level difference between channels:	less than 0.5 dB
TAPE SELECT switch:	Fe-Cr Level difference from NORMAL should be -0.2 dB ± 0.5 dB

Adjustment Location:



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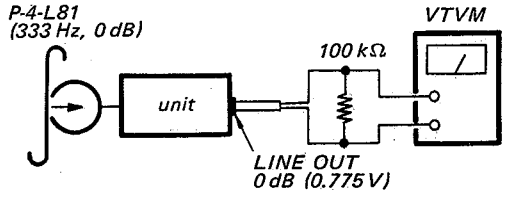
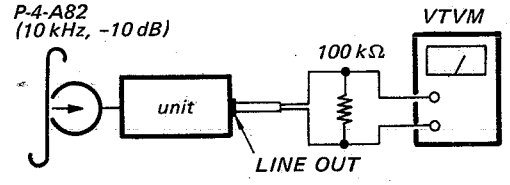
4. Playback Equalizer Adjustment

Procedure:

1. Mode: Playback



2. Mode: Playback

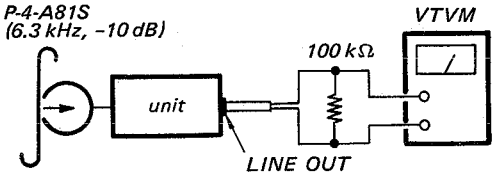


1) Adjust R118 (L-CH) and R218 (R-CH) to obtain the LINE OUT voltage 10.5 dB lower than that obtained in step 1 above.

Specification: 10~11 dB lower

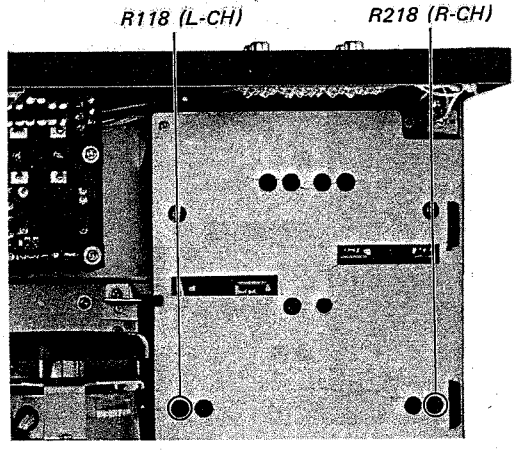
2) TAPE SELECT EQ switch: CrO_2, Fe-Cr
Check that the LINE OUT voltage is 13.5~15.5 dB lower than that obtained in step 1 above.

3. Mode: Playback
TAPE SELECT EQ switch: NORMAL



Check that the LINE OUT level is 9~12 dB lower than that obtained in step 1 above.

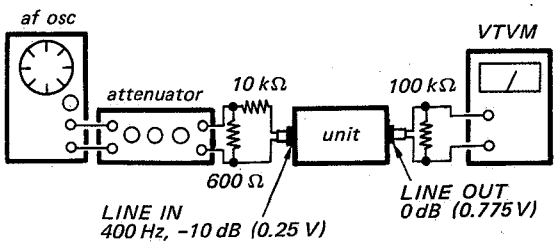
Adjustment Location:



5. VU Meter Calibration

Procedure:

1. Mode: Standard record (See page 11.)



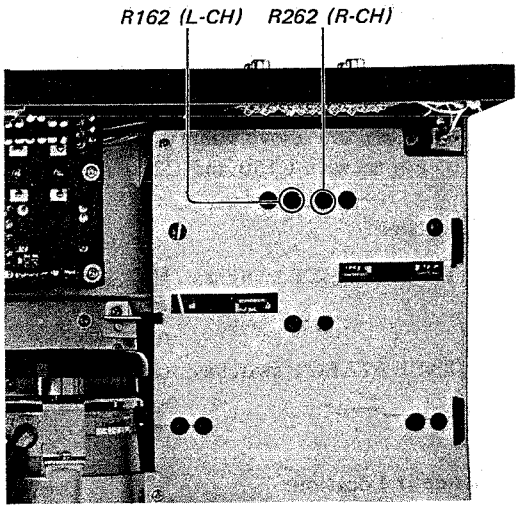
2.

Adjust	VU meter reading: 0 VU
R162 (L-CH) R262 (R-CH)	

Specification:

When the LINE IN level is adjusted to make 0 VU indication, VTVM reading should be -0.5~+0.5 dB (0.73~0.81 V).

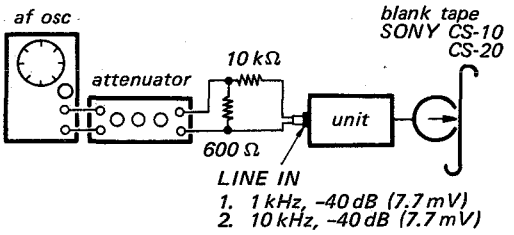
Adjustment Location:



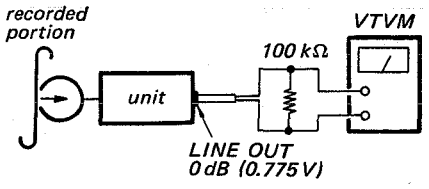
6. Record Bias Adjustment

Procedure:

1. Mode: 1) Standard record (See page 11.)
   tape: CS-10
   2) TAPE SELECT switches: CrO_2, HIGH
   tape: CS-20



2. Mode: Playback



1) When the output levels are not the same, short R323 by bridging the patterns.

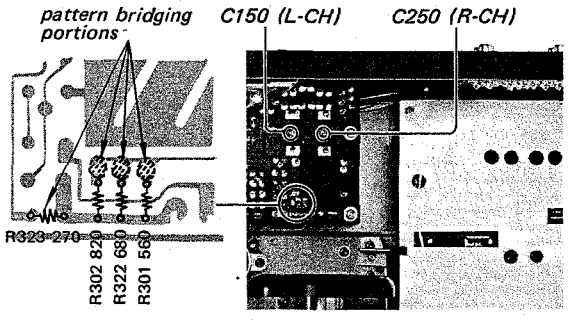
2) TAPE SELECT switches: CrO_2, HIGH
Adjust resistance value by selecting R301, R302 or R322 by bridging the patterns to obtain 0 dB (0.775 V) LINE OUT level. When the value of resistance is changed, step 1) is affected. Perform step 1) and 2) alternately.

3) When the above value is not obtained, fine adjust with C150 and C250.

Specification:

TAPE SELECT switches: NORMAL
-0.5~+0.5 dB
(0.73~0.81 V)
TAPE SELECT switches: CrO_2, HIGH
-1.5~+2.0 dB
(0.66~0.95 V)

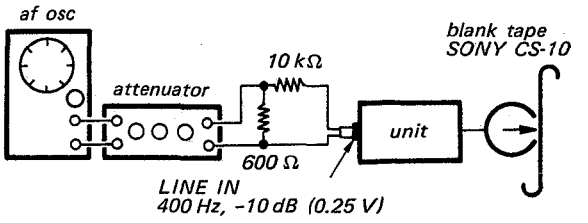
Adjustment Location:



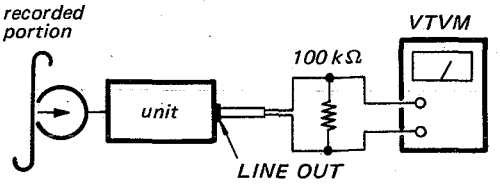
7. Record Level Adjustment

Procedure:

1. Mode: Standard record (See page 11.)



2. Mode: Playback



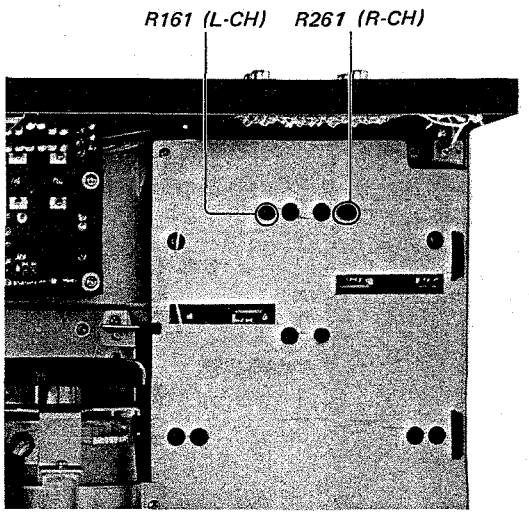
Adjust R161 (L-CH) and R261 (R-CH) to obtain 0 dB (0.775 V) VTVM reading.

3. Change the blank tape to CS-20 and CS-30, and perform the same record and playback procedure. Measure LINE OUT level.

Specification:

SONY tape	LINE OUT level
CS-10	0 dB (0.775 V, reference)
CS-20	-1.5~+0.5 dB (0.66~0.81 V)
CS-30	-1.5~+0.5 dB (0.66~0.81 V)

Adjustment Location:



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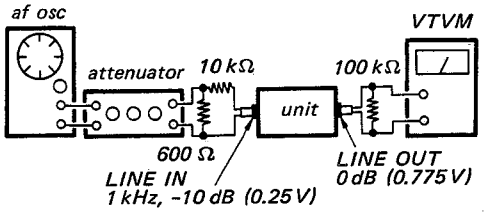
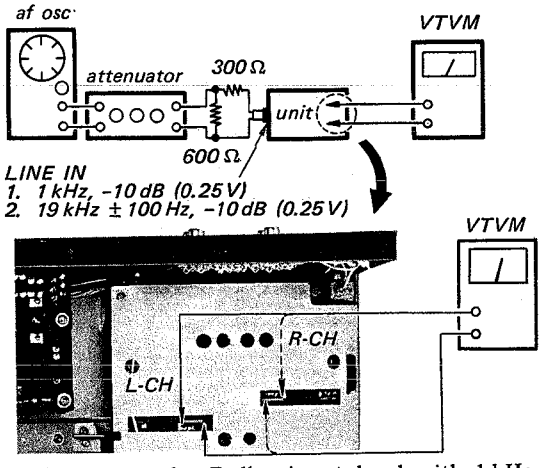
8. 19 kHz Filter Adjustment

Procedure:

1. Mode: Standard record (See page 11.)



2. Mode: Standard record
   DOLBY NR switch: ON

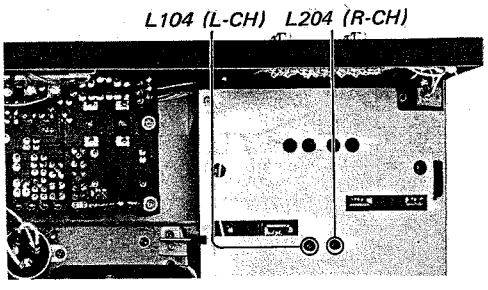


   1) Measure the Dolby input level with 1 kHz LINE IN signal.
      Specification: -21 dB ± 0.5 dB
      (69 mV~73 mV)

   2) With 19 kHz signal, adjust L104 (L-CH) and L204 (R-CH) to obtain the minimum Dolby input level.
      Specification: -53 dB ± 4 dB
      (1.1 mV~2.7 mV)

   3) DOLBY NR switch: ON-FILTER OFF
      With 19 kHz signal, measure the Dolby input level.
      Specification: -24 dB ± 2 dB
      (39 mV~62 mV)

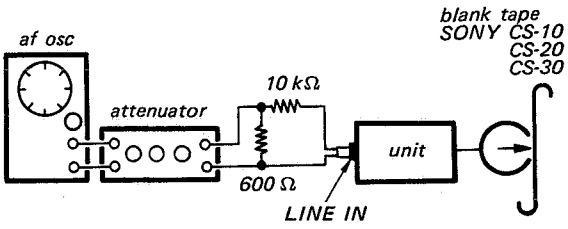
Adjustment Location:



9. Overall Frequency Response Measurement

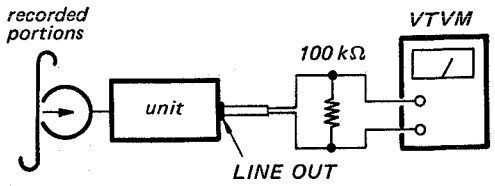
Procedure:

1. Mode: Standard record (See page 11.)
   TAPE SELECT switch: NORMAL (for CS-10)
   CrO_2 (for CS-20)
   Fe-Cr (for CS-30)



1. 400 Hz, -40 dB (7.7 mV)
2. 40 Hz, -40 dB (7.7 mV)
3. 4 kHz, -40 dB (7.7 mV)
4. 7 kHz, -40 dB (7.7 mV)
5. 10 kHz, -40 dB (7.7 mV)
6. 12.5 kHz, -40 dB (7.7 mV)

2. Mode: Playback



   Measure LINE OUT level difference from that of 400 Hz output level.

Tape \ f	Level difference				
	40 Hz	4 kHz	7 kHz	10 kHz	12.5 kHz
CS-10	-2 ± 2 dB	± 2 dB	± 2 dB	± 2 dB	
CS-20	-2 ± 2 dB	± 2 dB	± 2 dB	± 2 dB	± 2 dB
CS-30	-2 ± 2 dB	± 2 dB	± 2 dB	± 2 dB	± 2 dB

   Level difference between channels:
   less than 3.0 dB

3. DOLBY NR switch: ON
   In the same manner, perform steps 1 and 2 with 7 kHz and 10 kHz signals, and measure LINE OUT level difference from that of 400 Hz output level.

Tape \ f	Level difference	
	7 kHz	10 kHz
CS-10	$^{+3.5}_{-2.0}$ dB	$^{+3.5}_{-2.0}$ dB
CS-20	$^{+4.0}_{-2.5}$ dB	$^{+4.0}_{-2.5}$ dB
CS-30	$^{+4.0}_{-2.5}$ dB	$^{+4.0}_{-2.5}$ dB

   Level difference between channels:
   less than 5.0 dB

4. When the above specified values are not obtained, adjust record bias slightly, and repeat the measurement.

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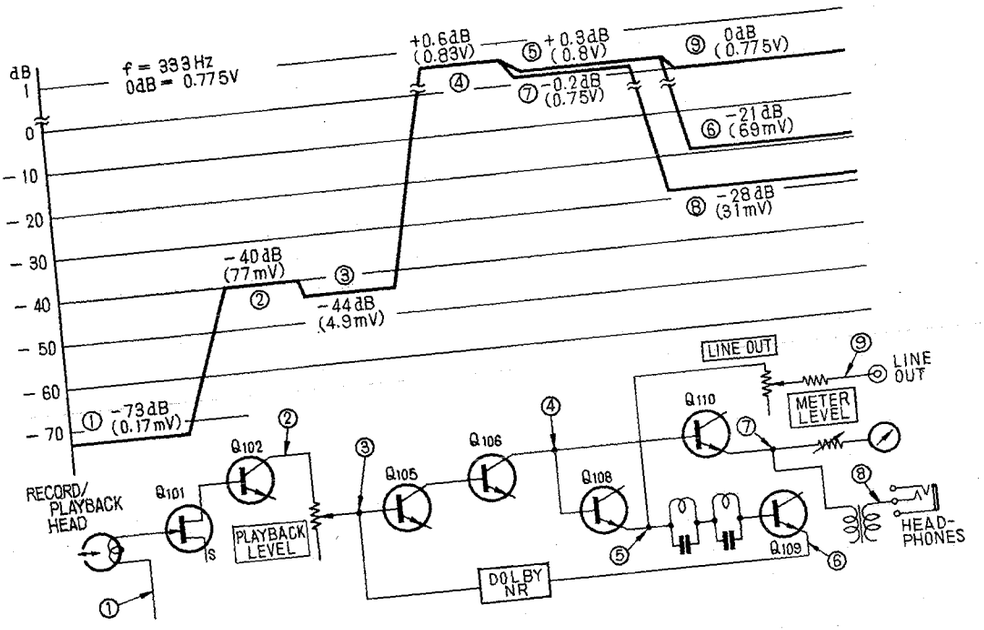
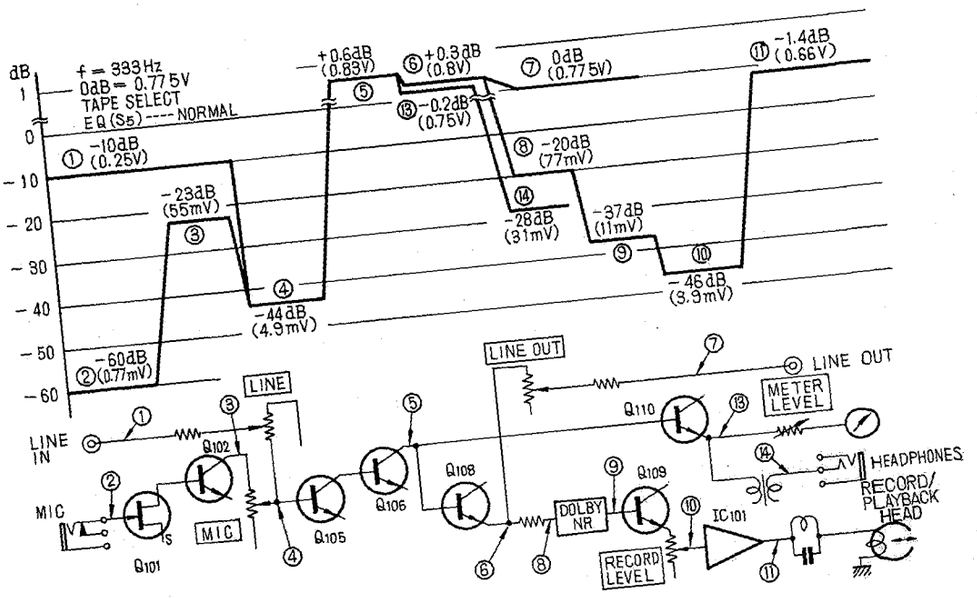
SECTION 4
DIAGRAMS

4-1. LEVEL DIAGRAM

Playback



Record



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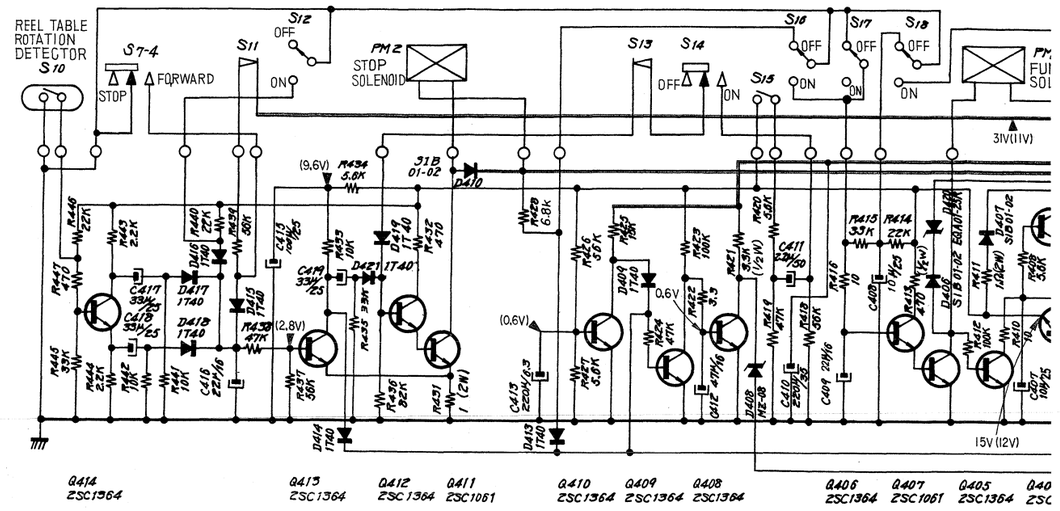
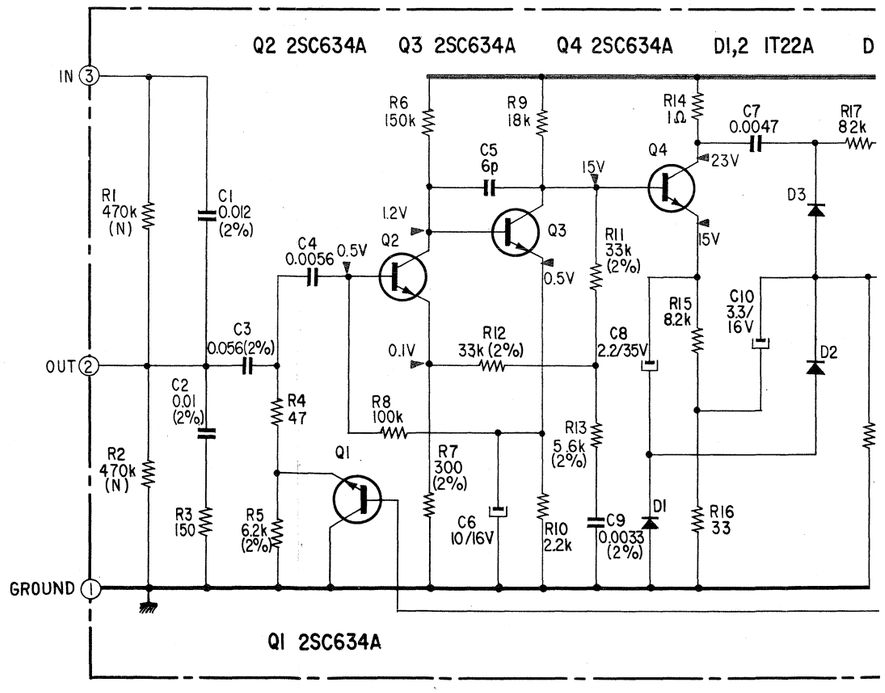
MEMO

4-2. SCHEMATIC DIAGRAM — System Control —

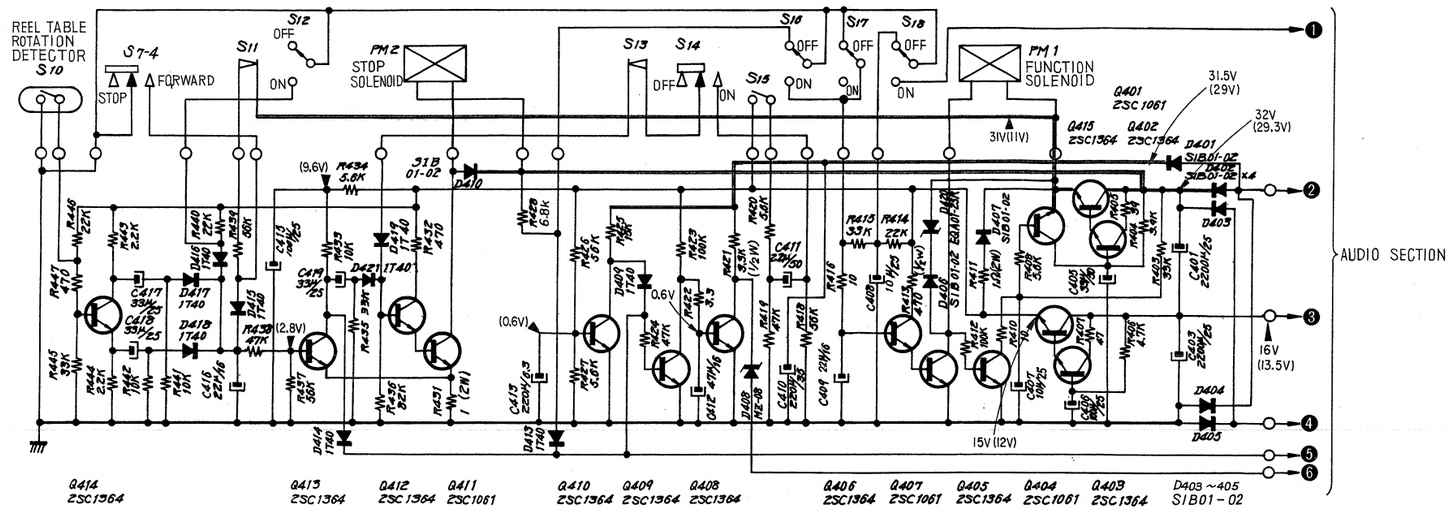


4-3. SCHEMATIC DIAGRAM —Dolby —



TC-209SD

4-2. SCHEMATIC DIAGRAM — System Control —

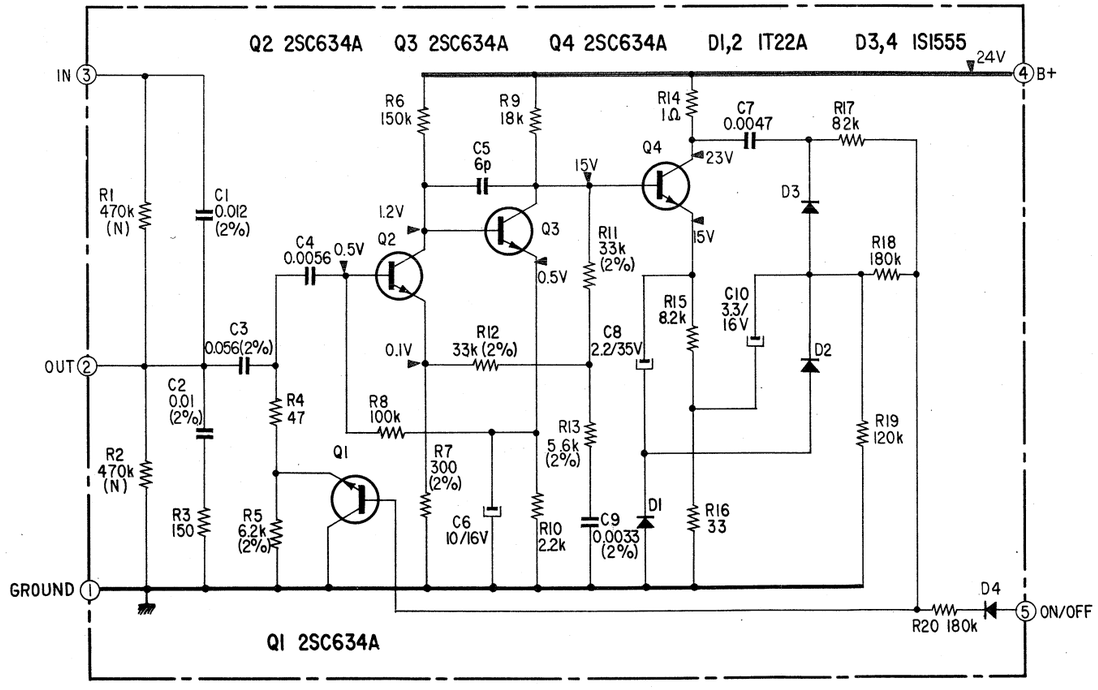


Note:

- All capacitors are in μF unless otherwise noted. 50 or less working volts are omitted except for electrolytic type. p = μμF
- All resistors are in Ω, ¼W, unless otherwise noted. k = 1,000 M = 1,000 k
- ⏚ indicates chassis ground.
- ▬ indicates B+ circuit.
- Voltages are DC with respect to ground unless otherwise noted. Readings taken under no-signal conditions with a VOM (20 kΩ/V). Readings in ( ) are in playback mode.
  no mark: common
- Switch Mode:

Ref. No.	Switch	Position
S7-4	TIMING	STOP
S10	REEL TABLE ROTATION DETECTOR	OFF
S11	PAUSE	OFF
S12	SOLENOID	OFF
S13	REWIND	OFF
S14	MEMORY	OFF
S15	MEMORY COUNTER	OFF
S16	QUICK	OFF
S17	FORWARD	OFF
S18	CASSETTE	OFF

4-3. SCHEMATIC DIAGRAM —Dolby —



Note:

- All capacitors are in μF unless otherwise noted. 50 or less working volts are omitted except for electrolytic type. p = μμF
- All resistors are in Ω, ¼W, unless otherwise noted. k = 1,000 M = 1,000 k
- ⏚ indicates chassis ground.
- (N) indicates a low-noise resistor.
- ▬ indicates B+ circuit.
- Voltages are DC with respect to ground unless otherwise noted. Readings taken under no-signal conditions with a VOM (20 kΩ/V).

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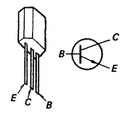
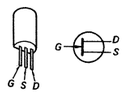
4-4. MOUNTING DIAGRAM – Audio Amp –

– Conductor Side –

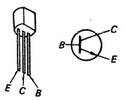
Q1~4 2SC634A



Q101, 201 2SK43

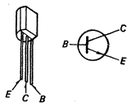


Q102, 202
Q105, 205 } **2SC1362**
Q109, 209

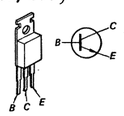


Q103, 203
Q104, 204
Q106~108
Q206~208
Q110, 210 } **2SC1364**
Q402, 403
Q405, 406
Q408~410
Q412~415

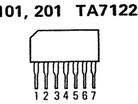
Q302~307 2SC945



Q301
Q401, 404 } **2SC1061**
Q407, 411

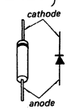


IC101, 201 TA7122AP



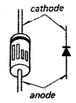
D1, 2 1T22A
D3, 4 1S1555
D103, 203 1T22

D102, 202
D104, 204
D409 } **1T40**
D413~419
D421

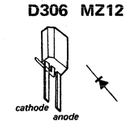


D101, 201 V06C

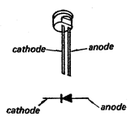
D301~304
D307
D401~407 } **SIB01-02**
D410



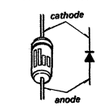
D305, 408 MZ08
D306 MZ12

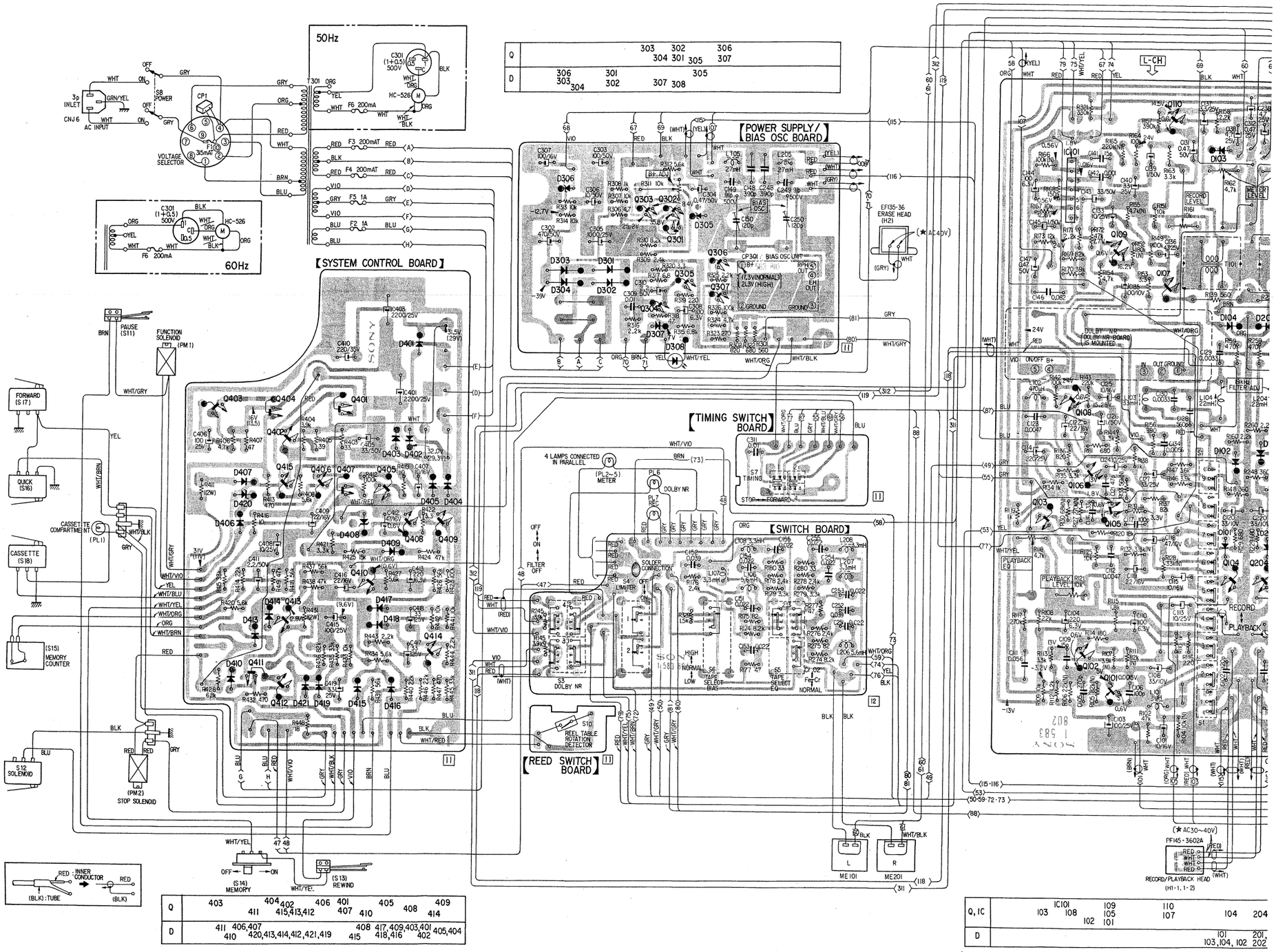


D308 SLP24B



D420 EQA01-25R

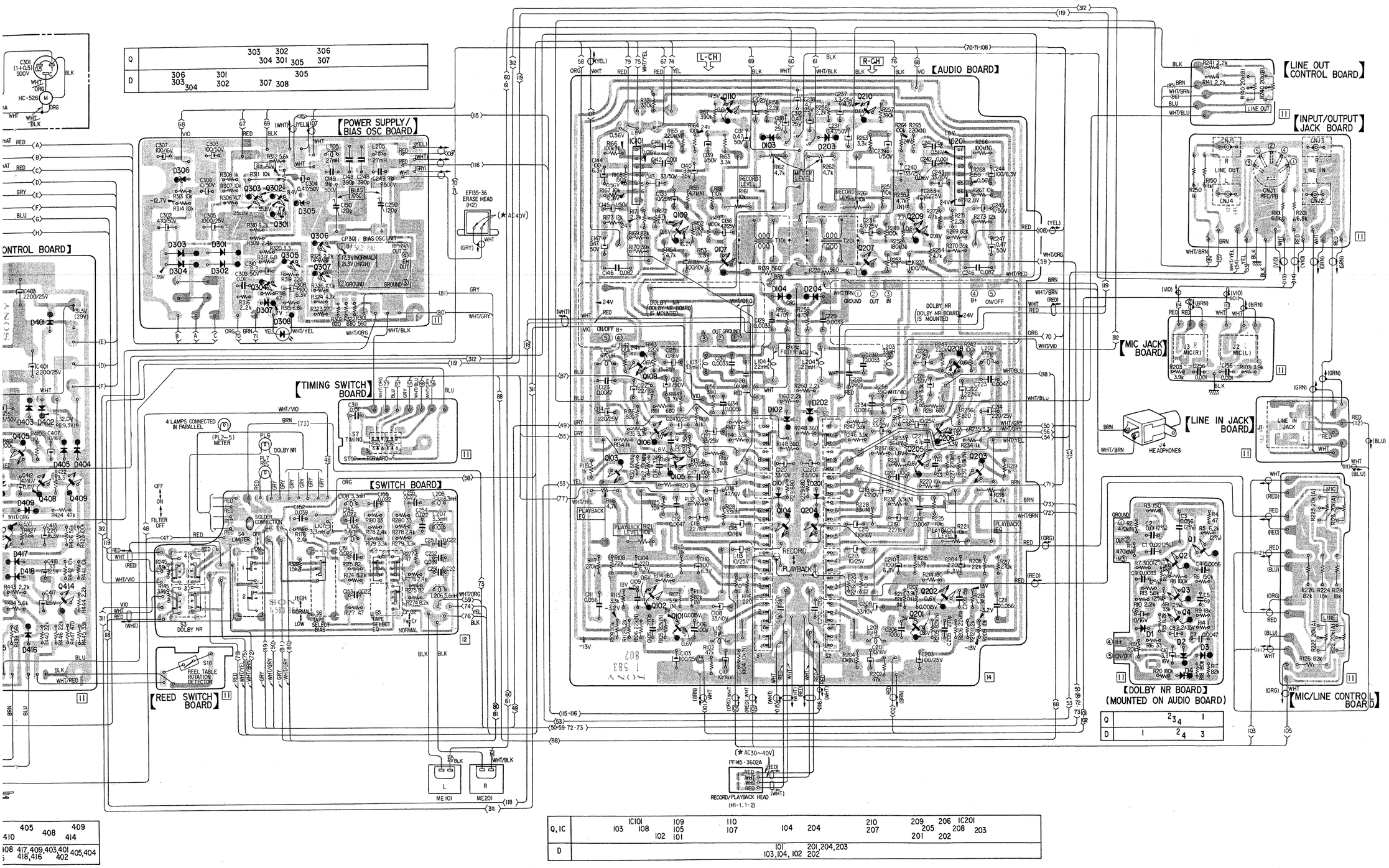




Q	303	302	306						
	304	301	305	307					
D	306	301	305						
	303	302	307	308					
	304								

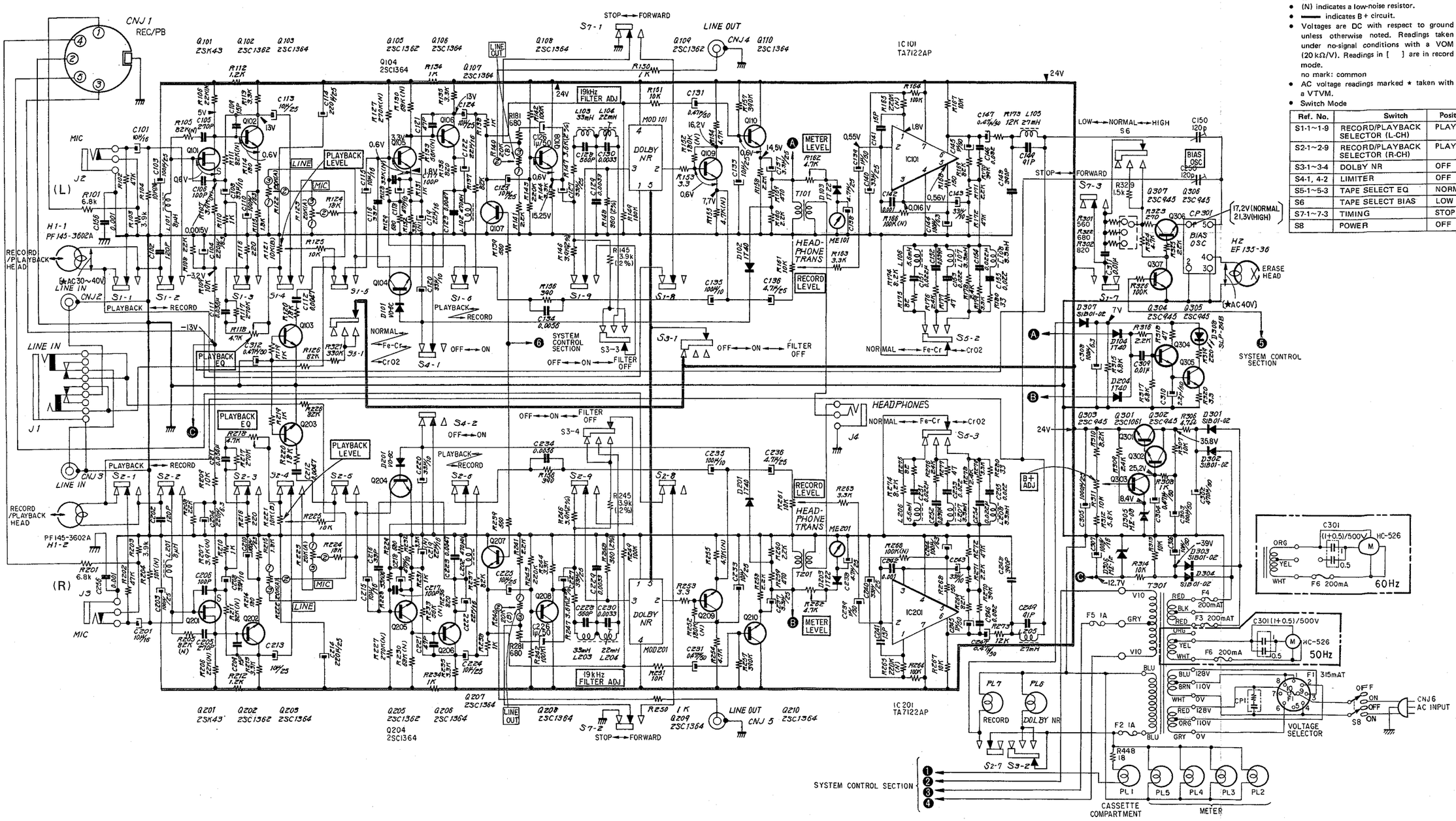
Q	403	404	402	406	401	405	408	409
		411	415,413,412		407	410		414
D	411	406,407			408	417,409,403,401		
	410	420,413,414,412,421,419			415	418,416	402	405,404

Q, IC	IC101	103	108	109	105	102	101	110	107	104	204
D										101, 103,104, 102	201, 202


【AUDIO BOARD】
【POWER SUPPLY/ BIAS OSC BOARD】
【TIMING SWITCH BOARD】
【SWITCH BOARD】
【REED SWITCH BOARD】
【LINE OUT CONTROL BOARD】
【INPUT/OUTPUT JACK BOARD】
【MIC JACK BOARD】
【LINE IN JACK BOARD】
【DOLBY NR BOARD】
(MOUNTED ON AUDIO BOARD)
【MIC/LINE CONTROL BOARD】
L-CH
R-CH
RECORD
PLAYBACK
DOLBY NR
EF135-36 ERASE HEAD (H2)
PF145-3602A RECORD/PLAYBACK HEAD (H1-1, 1-2)
ME101
ME201
HC-526
HEADPHONES
LINE OUT
LINE IN
MIC(R)
MIC(L)
REEL TABLE ROTATION DETECTOR
4 LAMPS CONNECTED IN PARALLEL
(PL2~5) METER
DOLBY NR
FILTER OFF
SOLDER CONNECTION
TAPE SELECT BIAS
TAPE SELECT EQ
NORMAL
HIGH
LOW
STOP
FORWARD
REVERSE
GROUND
ON/OFF
LINE
MIC
AC30~40V
AC40V

| Q | | |

4-5. SCHEMATIC DIAGRAM



Note:

- All capacitors are in μF unless otherwise noted. 50 or less working volts are omitted except for electrolytic type. p = μμF
- All resistors are in Ω, ¼W, unless otherwise noted. k = 1,000 M = 1,000 k
- ⏚ indicates chassis ground.
- (N) indicates a low-noise resistor.
- ▬▬ indicates B+ circuit.
- Voltages are DC with respect to ground unless otherwise noted. Readings taken under no-signal conditions with a VOM (20 kΩ/V). Readings in [ ] are in record mode.
  no mark: common
- AC voltage readings marked ★ taken with a VTVM.
- Switch Mode

Ref. No.	Switch	Position
S1-1~1-9	RECORD/PLAYBACK SELECTOR (L-CH)	PLAYBACK
S2-1~2-9	RECORD/PLAYBACK SELECTOR (R-CH)	PLAYBACK
S3-1~3-4	DOLBY NR	OFF
S4-1, 4-2	LIMITER	OFF
S5-1~5-3	TAPE SELECT EQ	NORMAL
S6	TAPE SELECT BIAS	LOW
S7-1~7-3	TIMING	STOP
S8	POWER	OFF

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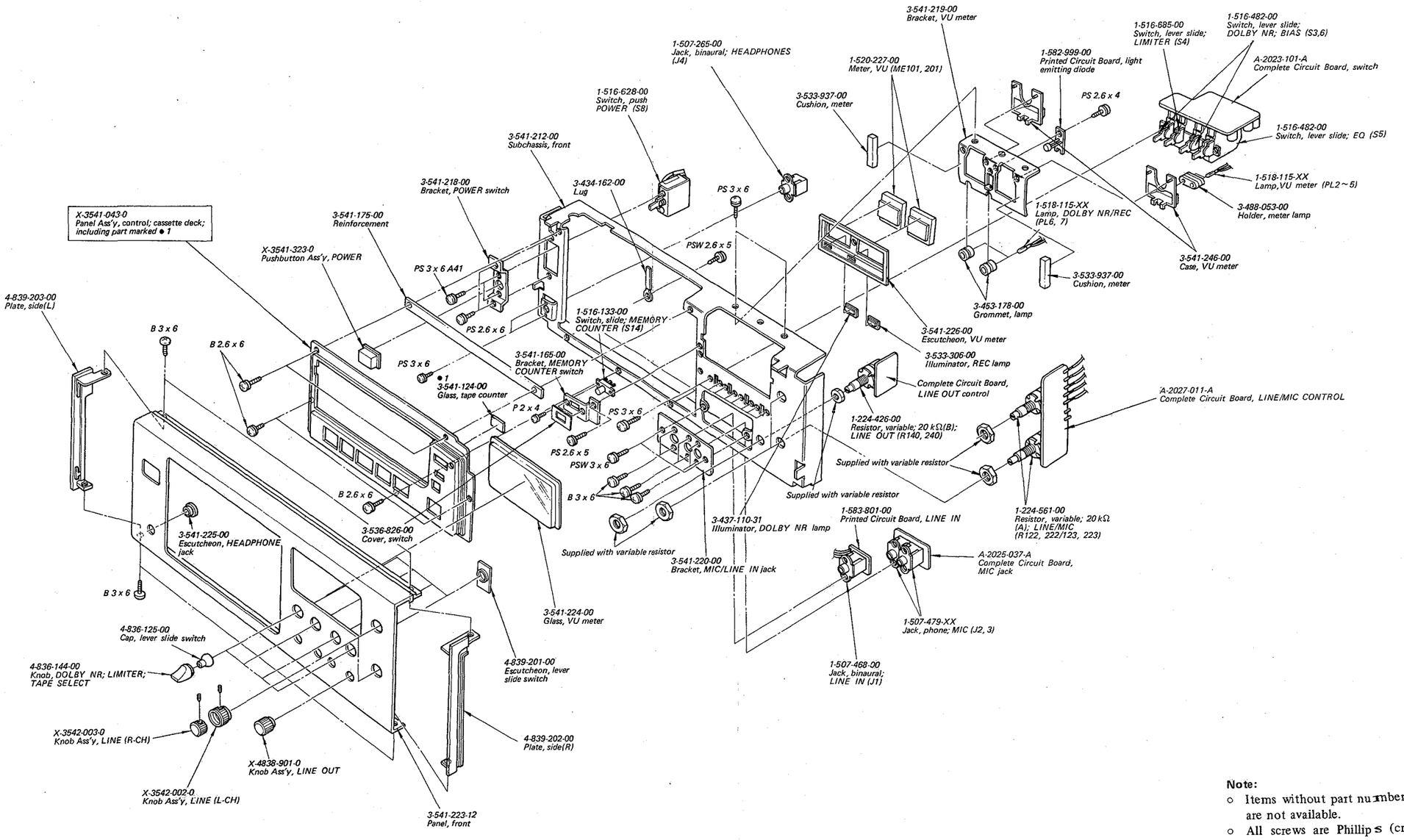
SECTION 5
EXPLODED VIEWS

5-1.



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head

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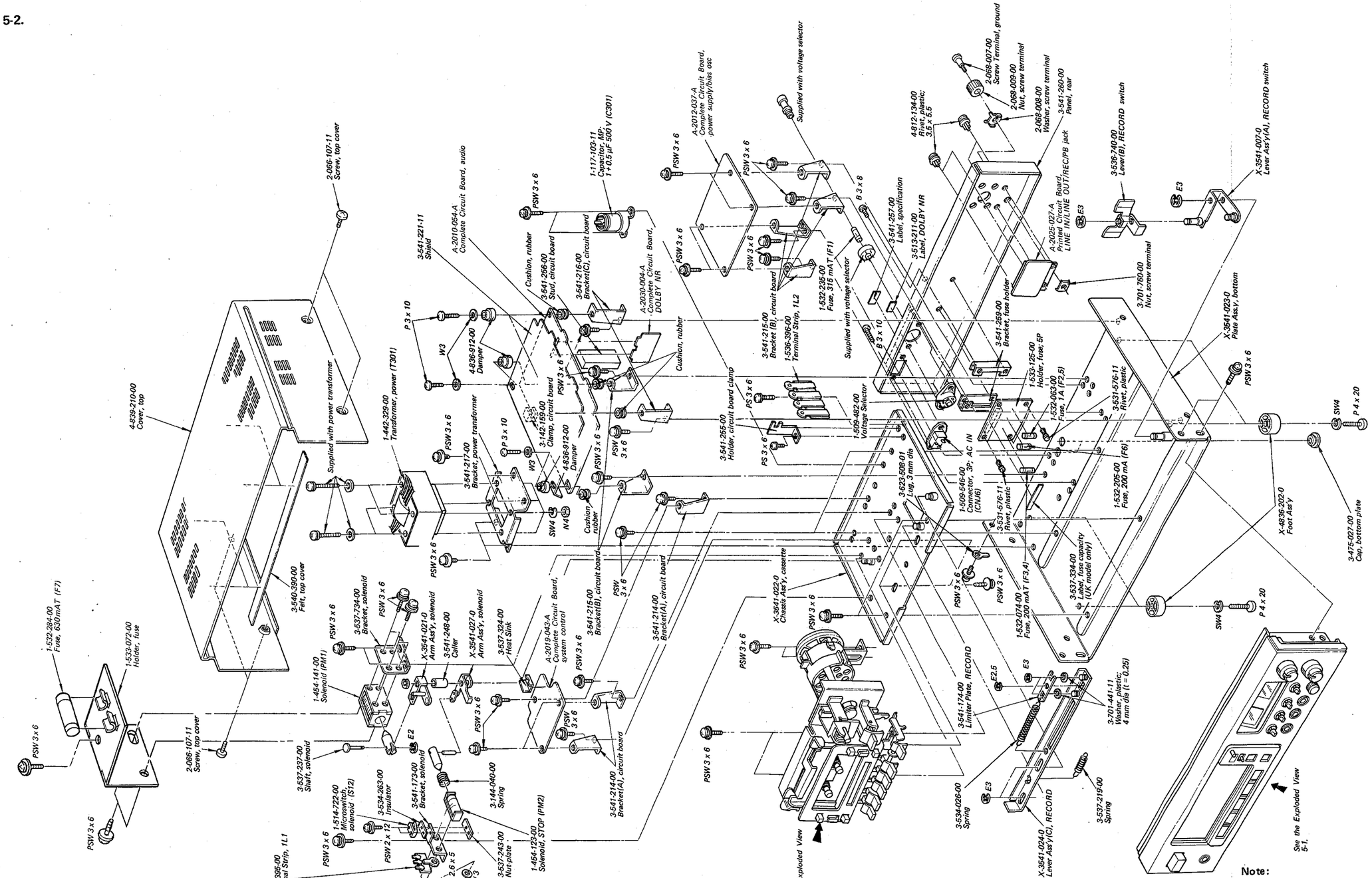
5-2.



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head

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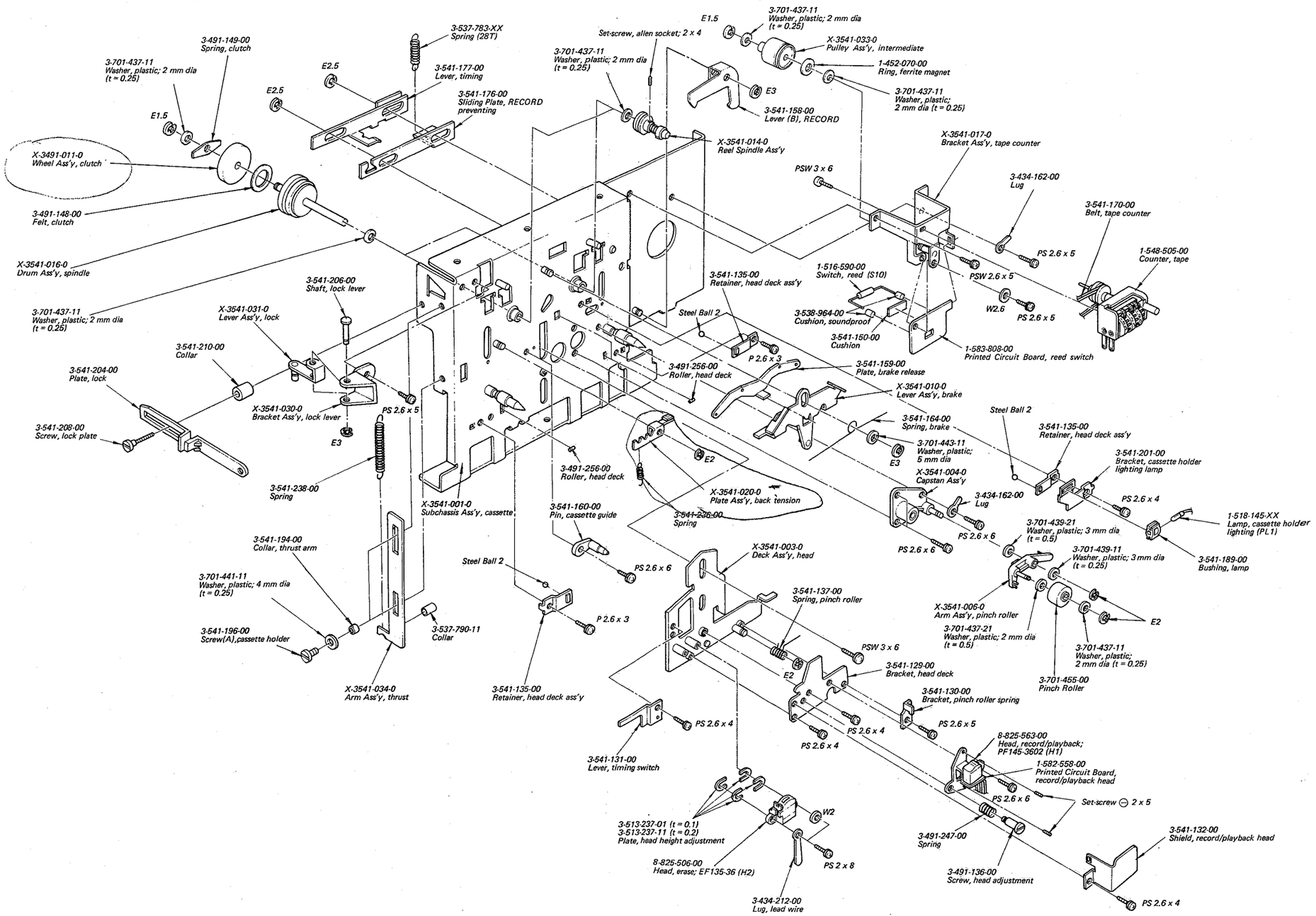
5-3.



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head

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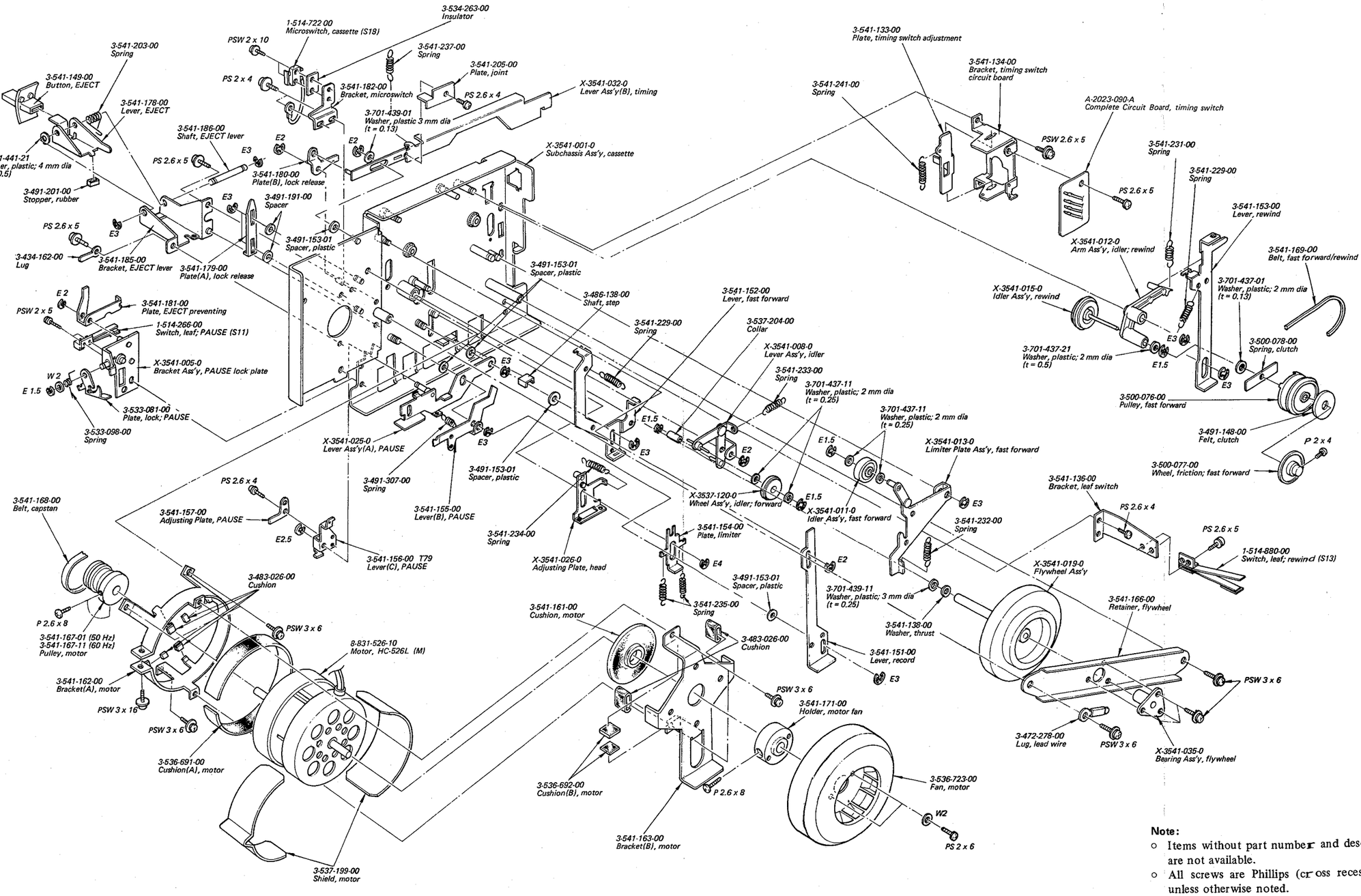
5-4.



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- (□□T) shows the number of coils in spring.

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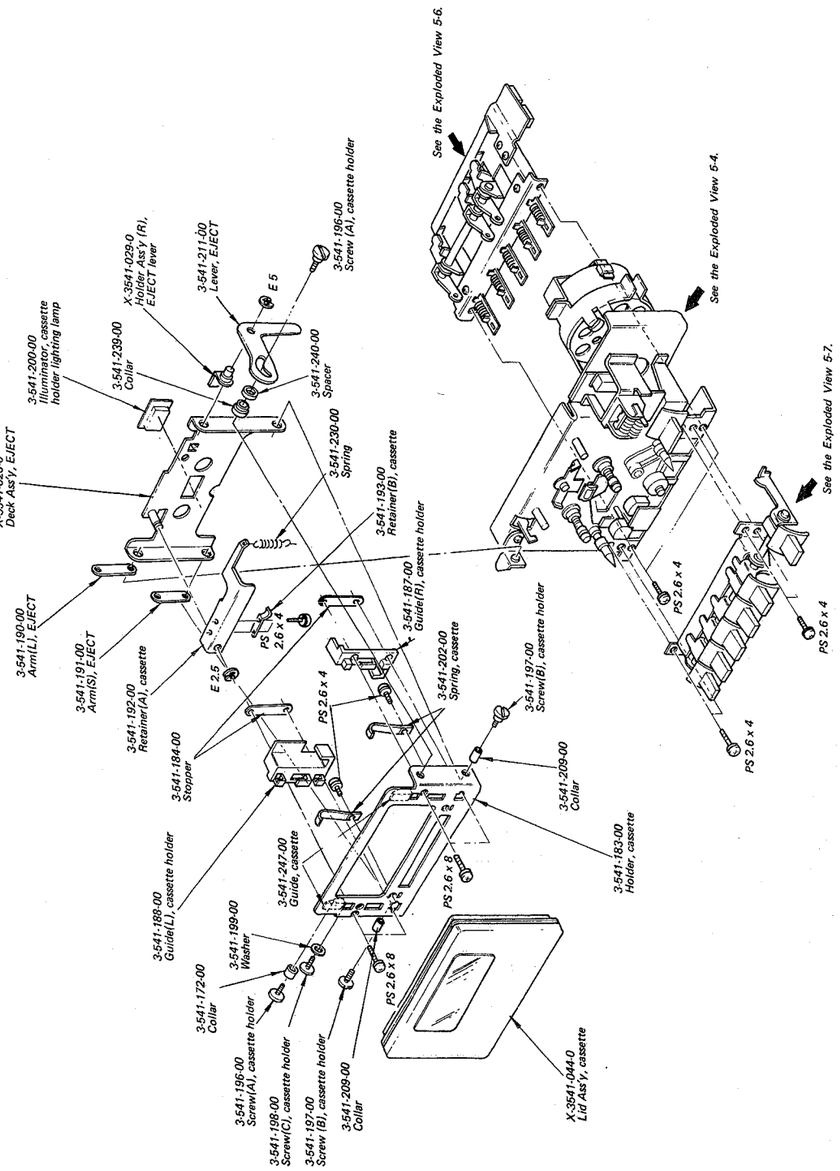
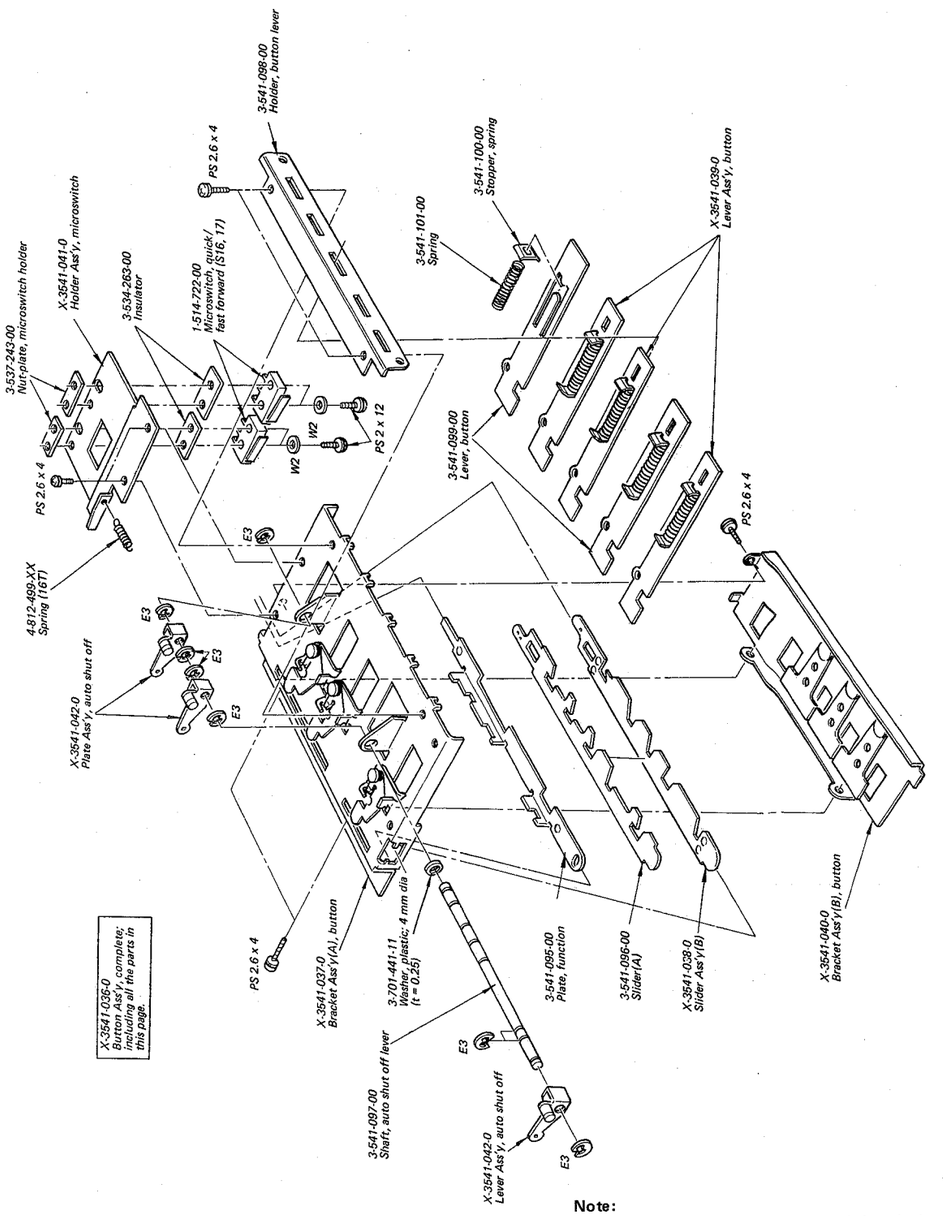
5-5.



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- (□□T) shows the number of coils in spring.

5-6.


3-541-098-00 Holder, button lever
PS 2.6 x 4
3-541-100-00 Stopper, spring
3-541-101-00 Spring
X-3541-039-0 Lever Ass'y, button
3-537-243-00 Nut-plate, microswitch holder
X-3541-041-0 Holder Ass'y, microswitch
3-534-263-00 Insulator
1-514-722-00 Microswitch, quick (ST6, 17)
W2
PS 2 x 12
3-541-099-00 Lever, button
PS 2.6 x 4
4-812-499-XX Spring (16T)
E3
X-3541-042-0 Plate Ass'y, auto shut off
X-3541-036-0 Button Ass'y, complete; including all the parts in this page.
PS 2.6 x 4
X-3541-037-0 Bracket Ass'y (A), button
3-701-441-11 Washer, plastic: 4 mm dia (t = 0.25)
3-541-095-00 Plate, function
3-541-096-00 Slider (A)
X-3541-038-0 Slider Ass'y (B)
X-3541-040-0 Bracket Ass'y (B), button
3-541-097-00 Shaft, auto shut off lever
X-3541-043-0 Lever Ass'y, auto shut off

Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
- (□□T) shows the number of coils in spring.

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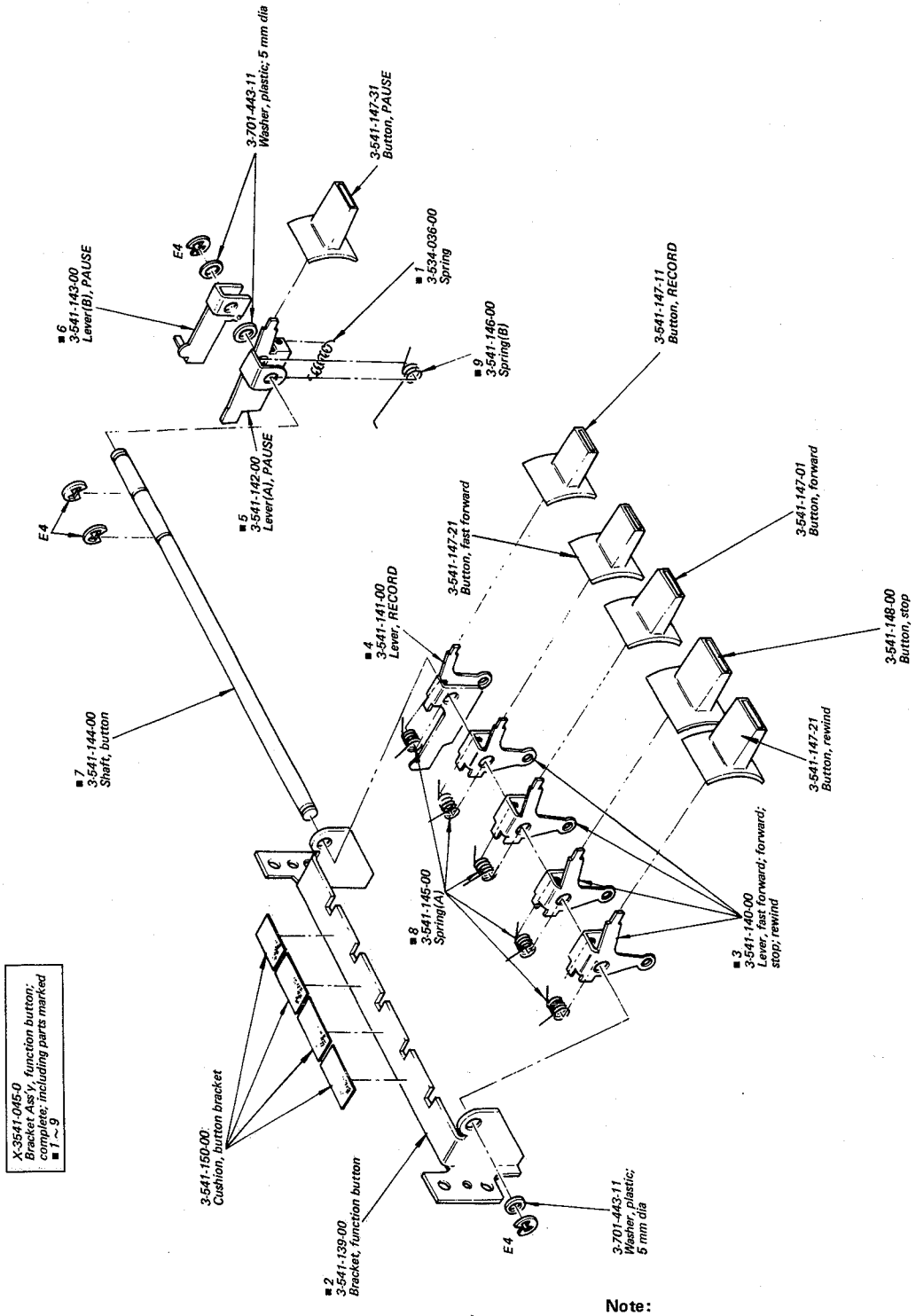
5-7.



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
- (–) = slotted head
  (□□T) shows the number of coils in spring.

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SECTION 6
ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
		Complete Circuit Board
	A-2010-054-A	Audio
	A-2012-037-A	Power Supply/Bias Osc
	A-2019-043-A	System Control
	A-2023-090-A	Timing Switch
	A-2023-101-A	Switch
	A-2025-027-A	Input/Output Jack
	A-2025-037-A	MIC Jack
	A-2027-011-A	LINE/MIC Control
	A-2030-004-A	DOLBY NR
		Printed Circuit Board
	1-582-558-00	Record/Playback head
	1-582-999-00	Light Emitting Diode
	1-583-808-00	Reed Switch
	1-583-801-00	LINE IN
		SEMICONDUCTORS
		Transistors
Q1~4		2SC634A
Q101,201		2SK43
Q102,202		2SC1362
Q103,203		2SC1364
Q104,204		2SC1364
Q105,205		2SC1362
Q106~108, Q206~208		2SC1364
Q109,209		2SC1362
Q110,210		2SC1364
Q301		2SC1061
Q302~307		2SC945
Q401		2SC1061
Q402,403		2SC1364
Q404		2SC1061
Q405,406		2SC1364
Q407		2SC1061
Q408~410		2SC1364
Q411		2SC1061
Q412~415		2SC1364
		ICs
IC101,102		TA7122AP
		Diodes
D1,2		1T22A
D3,4		1S1555
D101,201		VO-6C
D102,202		1T40
D103,203		1T22
D104,204		1T40
D301~304		SIB01-02
D305		MZ-08
D306		MZ-12
D307		SIB01-02
D308		SLP-24B
D401~407		SIB01-02
D408		MZ-08
D409		1T40
D410		SIB01-02
D413~419		1T40
D420		EQA01-25R
D421		1T40
		COILS
L101,201	1-407-519-00	8 μH, inductor
L102,202	1-407-661-XX	470 μH, microinductor
L103,203	1-407-212-XX	33 mH, microinductor
L104,204	1-407-240-00	22 mH, variable inductor
L105,205	1-407-211-XX	27 mH, microinductor
L106,206	1-407-203-XX	5.6 mH, microinductor
L107,207	1-407-200-XX	3.3 mH, microinductor
L108,208	1-407-200-XX	3.3 mH, microinductor

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TRANSFORMERS

Ref. No.	Part No.	Description
T101,201	1-427-284-00	Output
T301	1-442-329-00	Power

CAPACITORS

All capacitors are in μF, and electrolytic type unless otherwise noted. 50 or less working volts are omitted except for electrolytic type. p = μμF

Ref. No.	Part No.			
C1	1-129-896-11	0.012	±2%	plastic
C2	1-129-701-11	0.01	±2%	plastic
C3	1-129-899-11	0.056	±2%	plastic
C4	1-105-510-12	0.0056		mylar
C5	1-102-943-11	6 p		ceramic
C6	1-121-651-11	10	16 V	
C7	1-105-669-12	0.0056		mylar
C8	1-131-205-11	2.2	25 V	tantalum
C9	1-129-794-11	0.0033	±2%	plastic
C10	1-131-197-11	3.3	16 V	tantalum
C101,201	1-121-651-11	10	16 V	
C102,202	1-101-340-11	120 p	ceramic	
C103,203	1-121-416-11	100	25 V	
C104,204	1-121-419-11	220	6.3 V	
C105,205	1-102-984-11	270 p		ceramic
C106,206	1-102-975-11	100 p		ceramic
C108,208	1-121-402-11	33	10 V	
C109,209	1-102-956-11	15 p		ceramic
C110,210	1-121-413-11	100	6.3 V	
C111,211	1-108-813-12	0.056		mylar
C112,212	1-108-800-12	0.0047		mylar
C113,213	1-121-398-11	10	25 V	
C114,214	1-121-422-11	220	25 V	
C115,215	1-121-651-11	10	16 V	
C116,216	1-102-969-11	33 p		ceramic
C117,217	1-102-975-11	100 p		ceramic
C118,218	1-121-352-11	47	10 V	
C119,219	1-121-479-11	22	16 V	
C120,220	1-121-402-11	33	10 V	
C121,221	1-102-881-11	47 p		ceramic
C122,222	1-121-479-11	22	16 V	
C123,223	1-108-800-12	0.0047		mylar
C124,224 C125,225	1-121-398-11	10	25 V	
C126,226	1-121-391-11	1	50 V	
C127,227	1-121-404-11	33	25 V	
C128,228	1-102-236-11	560 p		ceramic
C129,229 C130,230	1-108-798-11	0.0033		mylar
C131,231	1-121-726-11	0.47	50 V	
C133,233	1-121-398-11	10	25 V	
C134,234	1-108-834-12	0.0056		mylar
C135,235	1-121-414-11	100	10 V	
C136,236	1-121-395-11	4.7	25 V	
C137,237	1-121-392-11	3.3	25 V	
C138,238	1-121-395-11	4.7	25 V	
C139,239	1-121-391-11	1	50 V	
C140,240	1-121-404-11	33	25 V	
C141,241	1-102-956-11	15 p		ceramic
C142,242	1-108-825-12	0.001		mylar
C143,243	1-121-402-11	33	10 V	
C144,244	1-121-413-11	100	6.3 V	
C145,245	1-121-391-11	1	50 V	
C146,246	1-108-848-12	0.082		mylar
C147,247	1-121-726-11	0.47	50 V	
C148,248	1-102-834-11	390 p		ceramic
C149,249	1-107-168-11	91 p		silvered mica
C150,250	1-141-034-00	120 p		trimmer
C151,251	1-108-808-12	0.022		mylar
C152,252	1-108-844-12	0.039		mylar
C153,253	1-108-808-12	0.022		mylar
C154,254	1-108-808-12	0.022		mylar
C155,255	1-108-808-12	0.022		mylar
C156,256	1-101-455-11	0.001		ceramic
C301	1-117-103-11	1 + 0.5	500 V MP	
C302	1-121-810-11	470	50 V	
C303	1-121-417-11	100	50 V	
C304	1-121-726-11	0.47	50 V	

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Ref. No.	Part No.			Description
C305	1-121-657-11	1000	25 V	
C306	1-121-738-11	10	50 V	
C307	1-121-415-11	100	16 V	
C308	1-121-413-11	100	6.3 V	
C309	1-108-864-12	0.01		mylar
C310	1-121-450-11	2.2	50 V	
C311	1-108-864-11	0.01		mylar
C312	1-121-726-11	0.47	50 V	
C401	1-123-047-11	2200	25 V	
C403	1-123-047-11	2200	25 V	
C405	1-121-405-11	33	50 V	
C406	1-121-416-11	100	25 V	
C407,408	1-121-398-11	10	15 V	
C409	1-131-201-11	22	16 V	tantalum
C410	1-121-261-11	220	35 V	
C411	1-121-450-11	2.2	50 V	
C412	1-121-409-11	47	16 V	
C413	1-121-419-11	220	6.3 V	
C415	1-121-416-11	100	25 V	
C416	1-121-479-11	22	16 V	
C417~419	1-121-404-11	33	25 V	

RESISTORS

All resistors are in ohms. ¼W regular type carbon and composition resistors are omitted. Check schematic diagram for resistance values.
k = 1000, M = 1000 k

R1,2	1-242-737-09	470 k		low noise
R5	1-210-853-11	6.2 k	±2%	
R7	1-210-850-11	300	±2%	
R11,12	1-210-855-11	33 k	±2%	
R13	1-210-852-11	5.6 k	±2%	
R104,204	1-242-697-09	10 k		low noise
R105,205	1-242-719-09	82 k		low noise
R106,206	1-242-705-09	22 k		low noise
R107,207	1-242-687-09	3.9 k		low noise
R111,211	1-242-719-09	82 k		low noise
R118,218	1-222-773-00	4.7 k		adjustable
R121,221	1-222-774-00	10 k		adjustable
R122,222 R123,223	1-224-561-00	20 k (A)		variable; LINE/MIC
R127,227	1-242-731-09	270 k		low noise
R128,228	1-242-709-09	33 k		low noise
R130,230	1-242-717-09	68 k		low noise
R132,232	1-242-685-09	3.3 k		low noise
R133,233	1-242-715-09	56 k		low noise
R140,240	1-224-426-00	20 k (B)		variable; LINE OUT
R146,246	1-210-872-11	3.9 k	±2%	
R147,247	1-210-871-11	3.6 k	±2%	
R148,248	1-210-870-11	360	±2%	
R152,252	1-242-735-09	180 k		low noise
R155,255	1-242-689-09	4.7 k		low noise
R161,261	1-222-774-00	10 k		adjustable
R162,262	1-222-773-00	4.7 k		adjustable
R165,265	1-242-729-09	220 k		low noise
R166,266	1-242-721-09	100 k		low noise
R331	1-222-774-00	10 k		adjustable
R411,431	1-206-439-11	1	2W	metal oxide

SWITCHES

S1,2	1-514-976-21	Slide, record/playback
S3	1-516-482-00	Lever Slide, DOLBY NR
S4	1-516-685-11	Lever Slide, LIMITER
S5,6	1-516-482-00	Lever Slide, EQ/BIAS
S7	1-513-273-00	Slide, timing
S8	1-516-628-00	Push, POWER
S10	1-516-590-00	Reed
S11	1-514-266-00	Leaf, PAUSE
S12	1-514-722-00	Microswitch, solenoid
S13	1-514-880-00	Leaf, rewind
S14	1-516-133-00	Slide, MEMORY COUNTER
S16~18	1-514-722-00	Microswitch; quick/forward/cassette

JACKS

CNJ1	1-509-549-00	Connector, REC/PB
CNJ2~5	1-507-433-00	Phono, 4 p; LINE IN/LINE OUT

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Ref. No.	Part No.	Description
CNJ6	1-509-546-00	Connector, 3 p; AC IN
J1	1-507-468-00	Binaural, LINE IN
J2,3	1-507-479-XX	Phone, MIC
J4	1-507-265-00	Binaural, HEADPHONES

FUSES

F1	1-532-235-00	315 mAT
F2	1-532-063-00	1 A
F3,4	1-532-074-00	200 mAT
F5	1-532-063-00	1 A
F6	1-532-205-00	200 mA

MISCELLANEOUS

CP1	1-231-057-00	Encapsulated Component
CP301	1-464-024-00	Unit, bias osc
H1	8-825-563-00	Head, record/playback; PF145-3602
H2	8-825-506-00	Head, erase; EF135-36
M	8-831-526-10	Motor, HC-526L

Ref. No.	Part No.	Description
ME101,201	1-520-227-00	Meter, VU
PL1	1-518-145-XX	Lamp, cassette holder lighting
PL2~7	1-518-115-XX	Lamp, VU meter; DOLBY NR; REC
PM1	1-454-141-00	Solenoid
PM2	1-454-123-00	Solenoid
	1-452-070-00	Ring, ferrite magnent
	1-508-693-00	Pin, terminal
	1-509-482-00	Voltage Selector
	1-533-125-00	Holder, fuse; 5 p
	1-535-506-00	Terminal, crimping
	1-536-395-00	Terminal Strip, 1L1
	1-536-396-00	Terminal Strip, 1L2
	1-548-505-00	Counter, tape

ACCESSORIES

Part No.	Description
X-3701-018-2	Cleaning Tips
1-534-049-51	Cord, connection; RK-74H
1-534-819-00	Cord, power; 3-p
3-541-250-00	Sticker, loading indication
3-780-776-11	Manual, instruction
3-793-010-20	Booklet, tape talk
3-793-520-82	Card, guaranty (UK model only)
3-793-828-11	Card, caution; cassette
8-890-060-00	Tape, cassette; Fe-Cr; C-60

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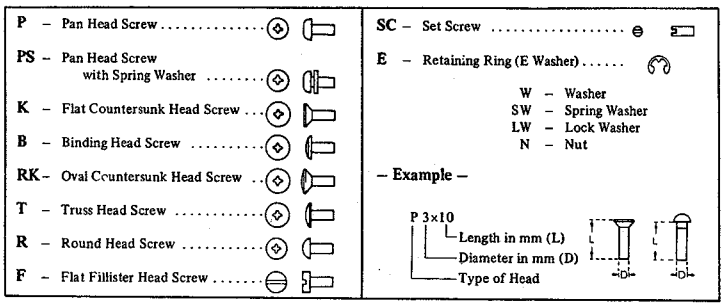
SECTION 7
HARDWARE

Part No.	*Description*
	SCREWS
	All screws are Phillips (cross recess) type unless otherwise noted.
7-621-259-15	P 2.6 x 3
7-621-259-45	P 2.6 x 6
7-621-259-55	P 2.6 x 8
7-621-710-34	SC 2 x 4, hexagon socket
7-621-710-41	(–) SC 2 x 5
7-621-759-25	PSW 2.6 x 5
7-621-770-67	B 2.6 x 6
7-628-253-05	PS 2.6 x 4
7-628-253-15	PS 2 x 5
7-628-253-25	PS 2 x 6
7-628-253-35	PS 2 x 8
7-628-253-45	PS 2 x 10
7-628-253-55	PS 2 x 12
7-628-254-01	PS 2.6 x 5
7-628-254-15	PS 2.6 x 6
7-628-254-25	PS 2.6 x 8
7-628-254-95	PS 2.6 x 4
7-682-166-01	P 4 x 22
7-682-547-03	B 3 x 6
7-682-547-06	B 3 x 6
7-682-647-01	PS 3 x 6
7-682-649-01	PS 3 x 10
7-682-947-01	PSW 3 x 6
7-682-952-01	PSW 3 x 16

Part No.	*Description*
	WASHERS
7-623-207-22	2.6, spring
7-623-210-22	4, spring
7-623-307-00	2.6, internal tooth
7-623-408-06	3, internal tooth
7-625-105-02	2 (small)
7-625-105-12	2 (middle)
7-625-107-12	2.6 (middle)
7-625-108-22	3 (large)
	RETAINING RINGS
7-624-102-01	E 1.5
7-624-104-01	E 2
7-624-106-01	E 3
7-624-108-01	E 4
7-624-109-01	E 5
7-624-118-01	E 2.5
	NUTS
7-684-013-01	3
7-684-014-01	4
	MISCELLANEOUS
7-623-507-01	Lug 2.6
7-623-508-11	Lug 3
7-671-112-00	Steel Ball 2

When ordering replacement parts, use PART NUMBERS listed in Parts List or shown in EXPLODED VIEWS.
Parts List reference numbers should not be used.

– Hardware Nomenclature –


P – Pan Head Screw
PS – Pan Head Screw with Spring Washer
K – Flat Countersunk Head Screw
B – Binding Head Screw
RK – Oval Countersunk Head Screw
T – Truss Head Screw
R – Round Head Screw
F – Flat Fillister Head Screw
SC – Set Screw
E – Retaining Ring (E Washer)
W – Washer
SW – Spring Washer
LW – Lock Washer
N – Nut
– Example –
P 3x10
Length in mm (L)
Diameter in mm (D)
Type of Head
D
D

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